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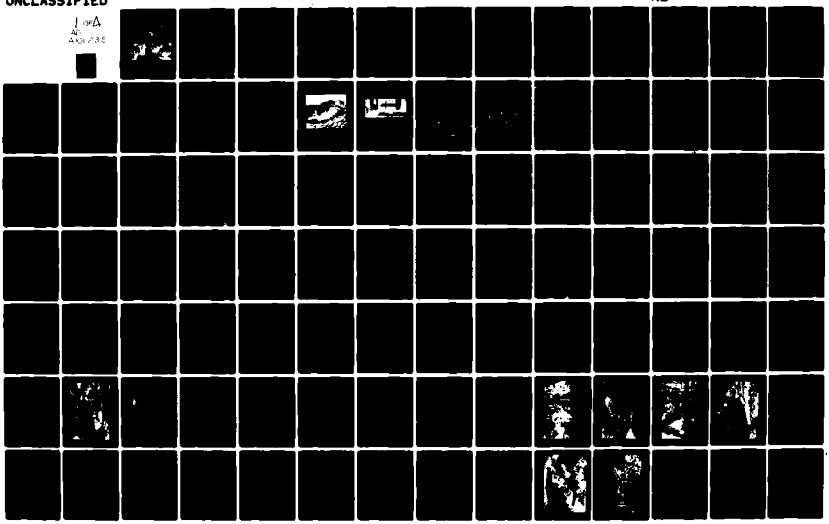

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REPORT OF FLOOD

TROPICAL STORM AGNES

JUNE 1972

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OSWEGO RIVER BASIN

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U.S. ARMY ENGINEER DISTRICT, BUFFALO

AUGUST 1973

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REPORT DOCUMENTATION PAGE

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1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A101 235	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Report of Flood, Tropical Storm Agnes, June 1972, Oswego River Basin.		5. TYPE OF REPORT & PERIOD COVERED Final rept.
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army Engineer District, Buffalo 1776 Niagara Street Buffalo, N.Y.		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Engineer District, Buffalo 1776 Niagara Street Buffalo, N.Y. 14207		12. REPORT DATE 1973
		13. NUMBER OF PAGES 184
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Distribution Unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

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Floods
Flooding
Oswego River Basin

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This final report of flooding in the Oswego River Basin that occurred during June 1972 is made in accordance with Engineering Manual 500-1-1 dated 4 January 1972. Specific instructions are contained in paragraph 72.73 of that document. A seperate report for the Genesee River Basin and a Summary Report that includes all the areas affected by "Agnes" within the Buffalo District have also been prepared. The Oswego River Basin situation was a category A flood because there was major flooding in large areas, extensive property damage, and serious

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danger to life and flood protective works. No loss of life was reported in the Oswego River Basin. Countries that were declared disaster areas in the Buffalo District as a result of "Agnes" are shown ~~on Plate 1~~. An Oswego River Basin Map is shown on Plate 2. Of the 15 countries within the Oswego River Basin, 13 were declared disaster areas. They are Cayuga, Chemung, Madison, Oneida, Onondaga, Ontario, Oswego, Schuyler, Seneca, Steuben, Tompkins, Wayne and Yates.

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COVER PHOTO

South Bay area residents struggle to save boats from storm waters of Oneida Lake.

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CONTENTS

TABLES

TABLES (Cont'd)

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FIGURES

EXHIBITS

PLATES

PLATES (Cont'd)

PLATES (Cont'd)

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PHOTO CREDITS

Corps of Engineers, Buffalo District, figure 14.

Ithaca Journal, figures 4, 5, 6, and 7.

Syracuse Herald - Journal, cover photo and figures 1, 8 through 12 and 15 through 18.

Wahl's Photo Service, Pittsford, NY, figure 3.

Unknown, figures 2 and 13.

FLOOD SITUATION

This final report of flooding in the Oswego River Basin that occurred during June 1972 is made in accordance with Engineering Manual 500-1-1 dated 4 January 1972. Specific instructions are contained in paragraph 72.73 of that document. A separate report for the Genesee River Basin and a Summary Report that includes all the areas affected by "Agnes" within the Buffalo District have also been prepared.

Seventeen teletype reports on flooding conditions were submitted by this office to the Office, Chief of Engineers, and Division Engineer, North Central Division. The teletypes, dated 21 June through 5 July and 10 and 17 July 1972, are attached as Exhibits 1 through 17. Informational copies were also sent, as appropriate, to the following:

Office of Emergency Preparedness (OEP), Region 5, Chicago, IL
OEP National Disaster Hdqtrs, Washington, DC
OEP Region 2, New York, NY
Amer. Cross Eastern Area Disaster Service, Alexandria, VA
Commanding General First Army, Hdqtrs., Ft. George Meade, MD
Comdr., Coast Guard District, Nine, Cleveland, OH
Defense Civil Preparedness Agency, Region 1, Maynard, MA
Defense Civil Preparedness Agency, Region 2, Olney, MD
Office of Natural Disaster and Civil Defense, Albany, NY
State Civil Defense, Worthington, OH

The Oswego River Basin situation was a Category A flood because there was major flooding in large areas, extensive property damage, and serious danger to life and flood protective works. No loss of life was reported in the Oswego River Basin. Counties that were declared disaster areas in the Buffalo District as a result of "Agnes" are shown on Plate 1. An Oswego River Basin Map is shown on Plate 2. Of the 15 counties within the Oswego River Basin, 13 were declared disaster areas. They are Cayuga, Chemung, Madison, Oneida, Onondaga, Ontario, Oswego, Schuyler, Seneca, Steuben, Tompkins, Wayne and Yates.

The first direct action taken by Buffalo District was to dispatch a man by civil air patrol aircraft to the City of Auburn on 25 June 1972 and then to the Town of Skaneateles on 26 June 1972. Skaneateles Lake had risen well above flood stage and the upper dam on Owasco Lake Outlet was threatening failure which would have sent a large flood wave through the City of Auburn. Figure 1 shows workmen preparing to place large stone on the pier of the flood threatened dam at Auburn. A Buffalo District representative was advising during the situation. Figure 2 shows the flood waters of Owasco Lake Outlet inundating the first floor of the Dunn and McCarthy Inc. manufacturing plant at Auburn.

When it became apparent that a major disaster was imminent an Emergency Operations Center was set up at the Buffalo District Office. The center was open 24 hours a day from 21 June to 28 June; 15 hours a day from 29 June to 7 July; 12 hours a day from 8 July to 18 July; 9 hours a day from 19 July to 29 July; and 8 hours a day from 30 July to mid-October. The center was open seven days a week from 21 June to 29 July and six days a week from 30 July to mid-October.

Initially the center was used as a means of communication and information exchange between the Buffalo District and areas affected by flooding. After the initial flooding, the center served as the coordinating area for missions assigned to the Buffalo District by OEP.

Chicago, Detroit, Kansas City, Rock Island, Sacramento, and St. Paul Districts dispatched additional civilian personnel to the Buffalo District, and military personnel were obtained from West Point and Fort Belvoir to assist in performing missions assigned to Buffalo District from OEP. Area office personnel remained in the field to assist whenever possible to obtain high water marks, flood damage figures, and other pertinent information.

OEP assigned the following missions to the Buffalo District pertinent to the Oswego River Basin:

1. Remove wreckage and debris to clear essential access and recovery routes and to eliminate imminent public health and safety hazards.

2. Perform minimum temporary emergency repair to streets, roads, and bridges necessary to restore essential traffic on an emergency basis on "non-Federal aid system" routes.

3. Provide supplemental assistance beyond that within the physical ability of the owners to restore essential utility service including gas and electric distribution systems, telephone, and telegraph.

4. Furnish preliminary estimate of damages for the following:

a. Clearance of debris and wreckage.

b. Emergency protective measures.

c. Restoration of dikes, levees, irrigation works, and drainage facilities.

d. Restoration of public buildings and related equipment.

e. Restoration of publicly owned utilities.

5. Perform detailed damage survey reports covering the aforementioned categories.

6. Make temporary repairs to certain housing rendered uninhabitable as a result of the major disaster.

7. Provide technical and administrative assistance in the processing of applications for repairs of less than $50,000, including processing of vouchers, performing final audits, and making reimbursements.

8. Perform contract work in; clearance of debris and wreckage and emergency protective measures, at the following locations:

a. Six Mile Creek - Town of Caroline, Tompkins County

b. Oneida Creek - City of Oneida, Madison County

c. Hammondsport - Steuben County

d. Skaneateles Creek - Town of Jordan, Onondaga County

e. Keuka Lake Outlet - City of Penn Yan, Yates County

f. Owasco Outlet - City of Auburn, Cayuga County

g. Various streams - Town of Wayne, Steuben County

h. Cayuga Inlet - City of Ithaca, Tompkins County

9. Perform contract work for restoration of street, road, and highway facilities, and restoration of dikes, levees, irrigation works, and drainage facilities at the following locations:

a. Port Byron - Cayuga County

b. Moravia - Cayuga County

c. Weedsport - Cayuga County

d. Camillus - Onondaga County

e. Montour Falls - Schuyler County

f. Seneca Lake at Willard - Seneca County

This report provides detailed data on the major lakes of the Basin, and Clyde, Seneca, Oneida and Oswego Rivers. Various other areas are given minor coverage. The information presented contains precipitation and weather synopsis furnished by National Weather Service (NWS), provisional stage-hydrographs and peak discharges furnished by the United States Geological Survey (USGS), and damage estimates obtained by field reconnaissance by Buffalo District personnel and the Soil Conservation Service during and after the flood.

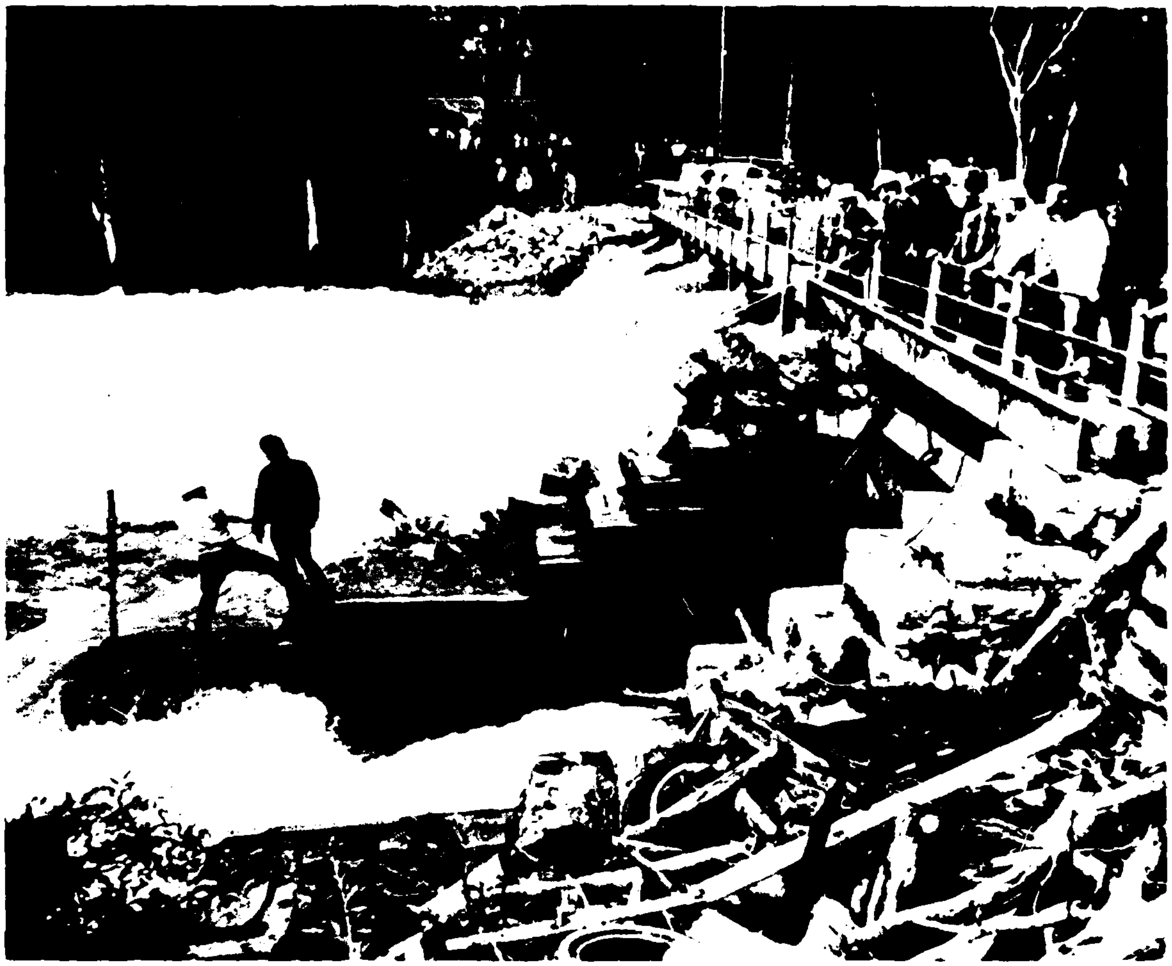
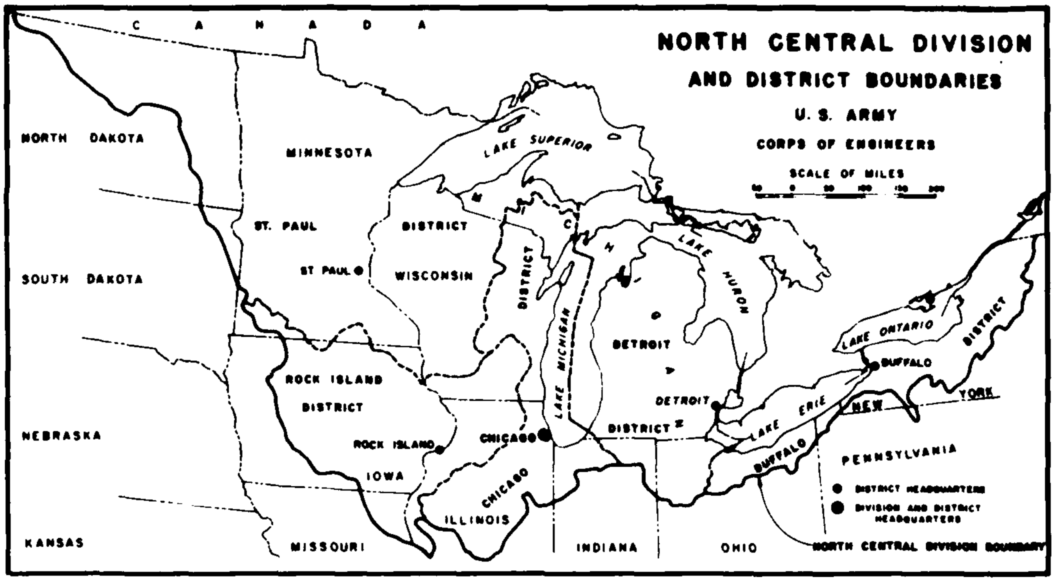


Figure 1 Workmen prepare to place large boulders in an attempt to reinforce a pier of the state dam at Owasco Lake outlet. Photo taken 25 June 1972.

Figure 2 Owasco Lake outlet flood waters approximately ten feet above normal, at the Dunn and McCarthy Inc. plant. Water normally flows under the plant.


NORTH CENTRAL DIVISION
AND DISTRICT BOUNDARIES
U. S. ARMY
CORPS OF ENGINEERS
SCALE OF MILES
CANADA
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
MINNESOTA
ST. PAUL
DISTRICT
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WISCONSIN
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
DETROIT
DISTRICT
ROCK ISLAND
DISTRICT
ROCK ISLAND
IOWA
CHICAGO
ILLINOIS
MISSOURI
INDIANA
OHIO
LAKE ONTARIO
DISTRICT
BUFFALO
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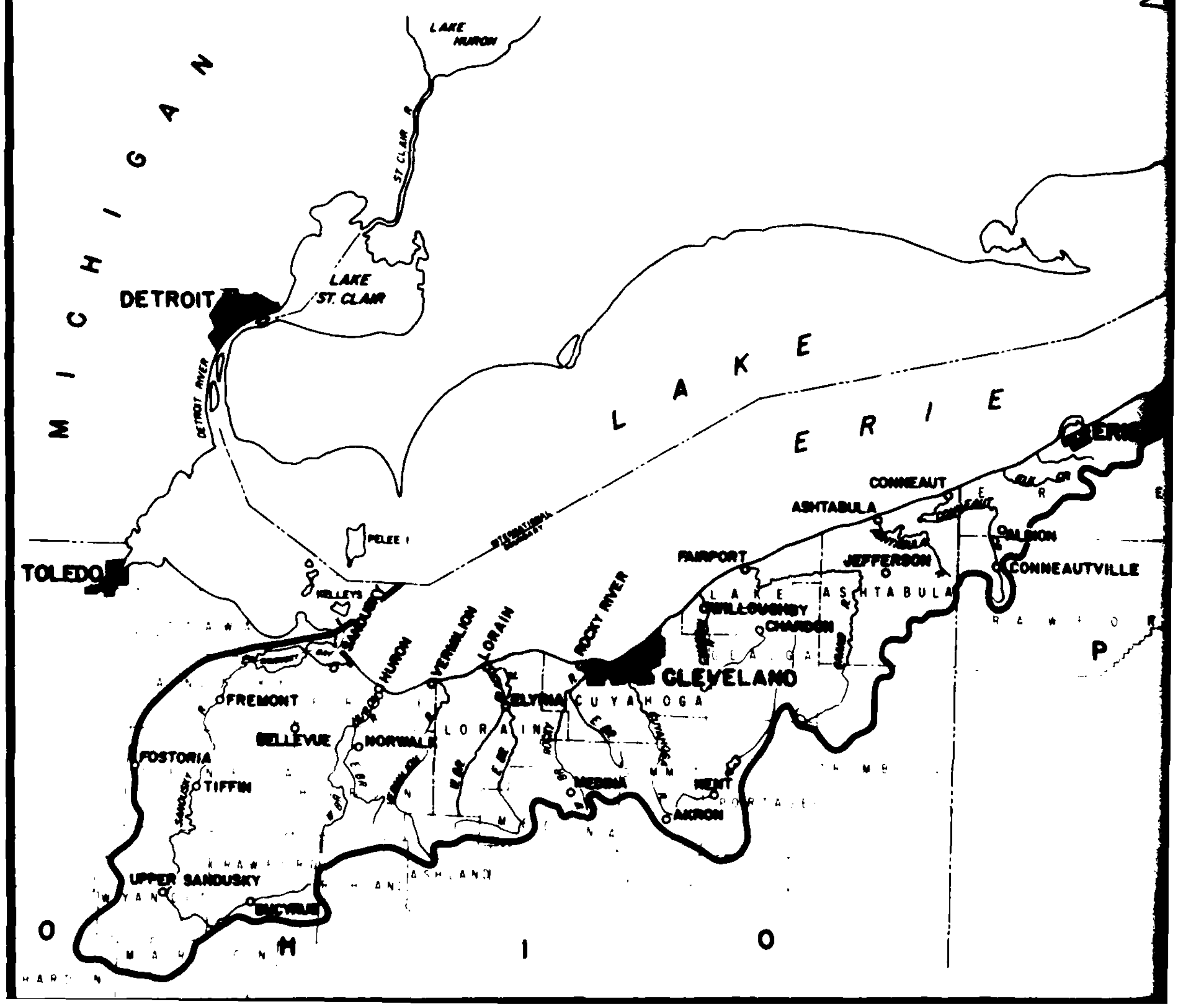
PENNSYLVANIA
DISTRICT HEADQUARTERS
DIVISION AND DISTRICT HEADQUARTERS
NORTH CENTRAL DIVISION BOUNDARY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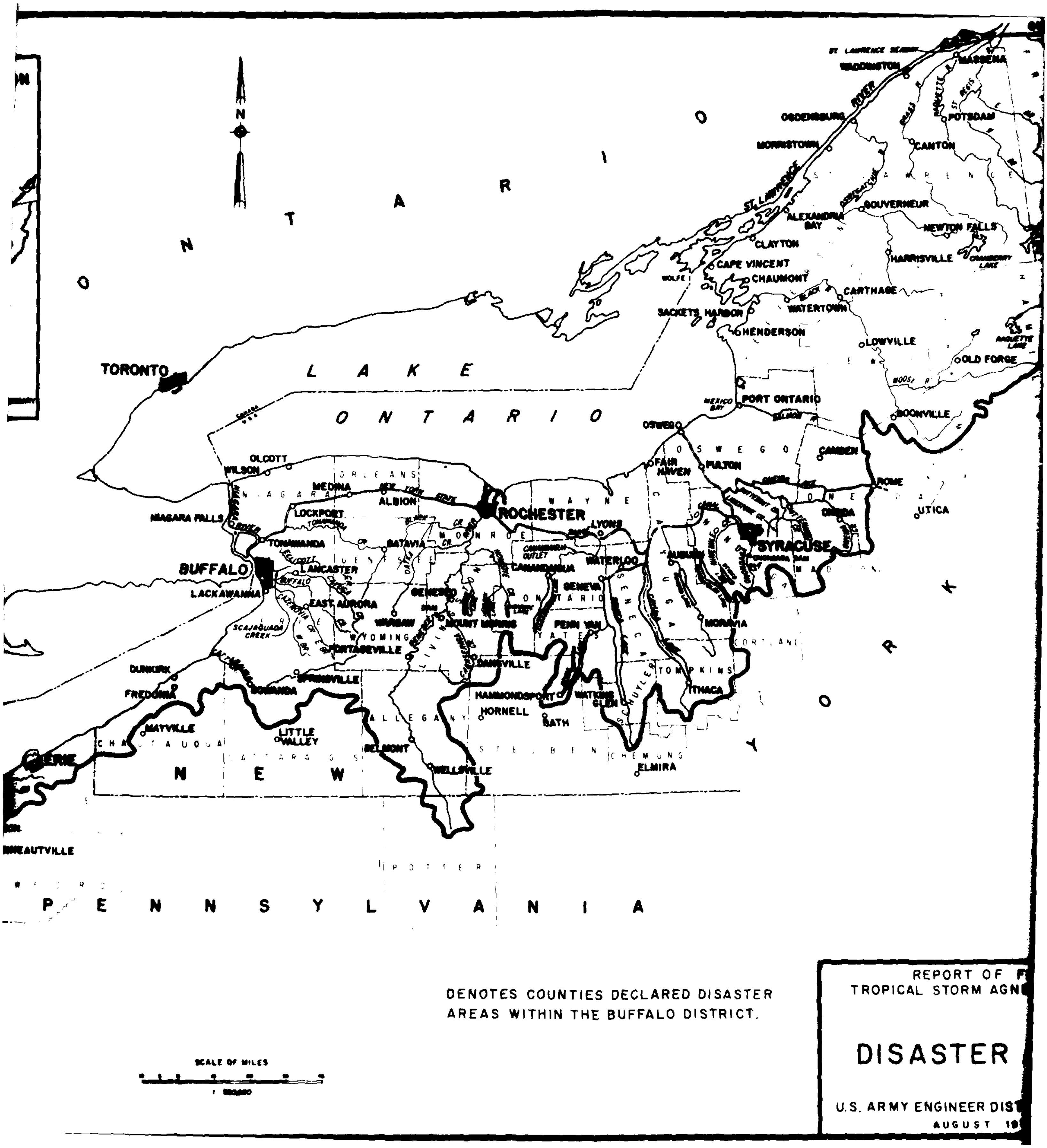

LAKE ONTARIO
TORONTO
BUFFALO
ROCHESTER
SYRACUSE
NIAGARA FALLS
LOCKPORT
TONAWANDA
LACKAWANNA
LANCASTER
EAST AURORA
BATAVIA
ALBION
MEDINA
OLCOTT
WILSON
GENESEO
WARSAW
MOUNT MORRIS
PORTAGEVILLE
DANSVILLE
CANANDAIGUA
GENEVA
WATERLOO
LYONS
PENN YAN
HAMMONDSPORT
WATKINS GLEN
HORNELL
BATH
ITHACA
MORAVIA
AUBURN
OSWEGO
FULTON
FAIR HAVEN
CAMDEN
ROME
UTICA
ONEIDA
PORT ONTARIO
MEXICO BAY
BOONVILLE
OLD FORGE
LOWVILLE
HENDERSON
SACKETS HARBOR
WATERTOWN
CARTHAGE
CHAUMONT
CAPE VINCENT
CLAYTON
ALEXANDRIA BAY
GOUVERNEUR
HARRISVILLE
NEWTON FALLS
CANTON
POTSDAM
MASSENA
WADDINGTON
OGDENSBURG
MORRISTOWN
ST. LAWRENCE SEAWAY
ST. LAWRENCE RIVER
DUNKIRK
FREDONIA
MAYVILLE
LITTLE VALLEY
SPRINGVILLE
SALAMANCA
BELMONT
WELLSVILLE
ELMIRA
ERIE
NEW YORK
PENNSYLVANIA
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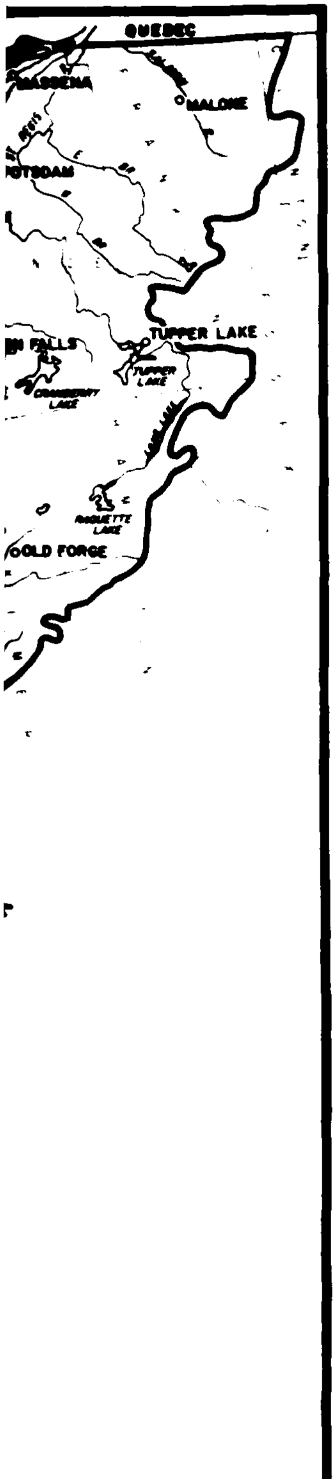

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PLATE I


LAKE ONTARIO
ROCHESTER
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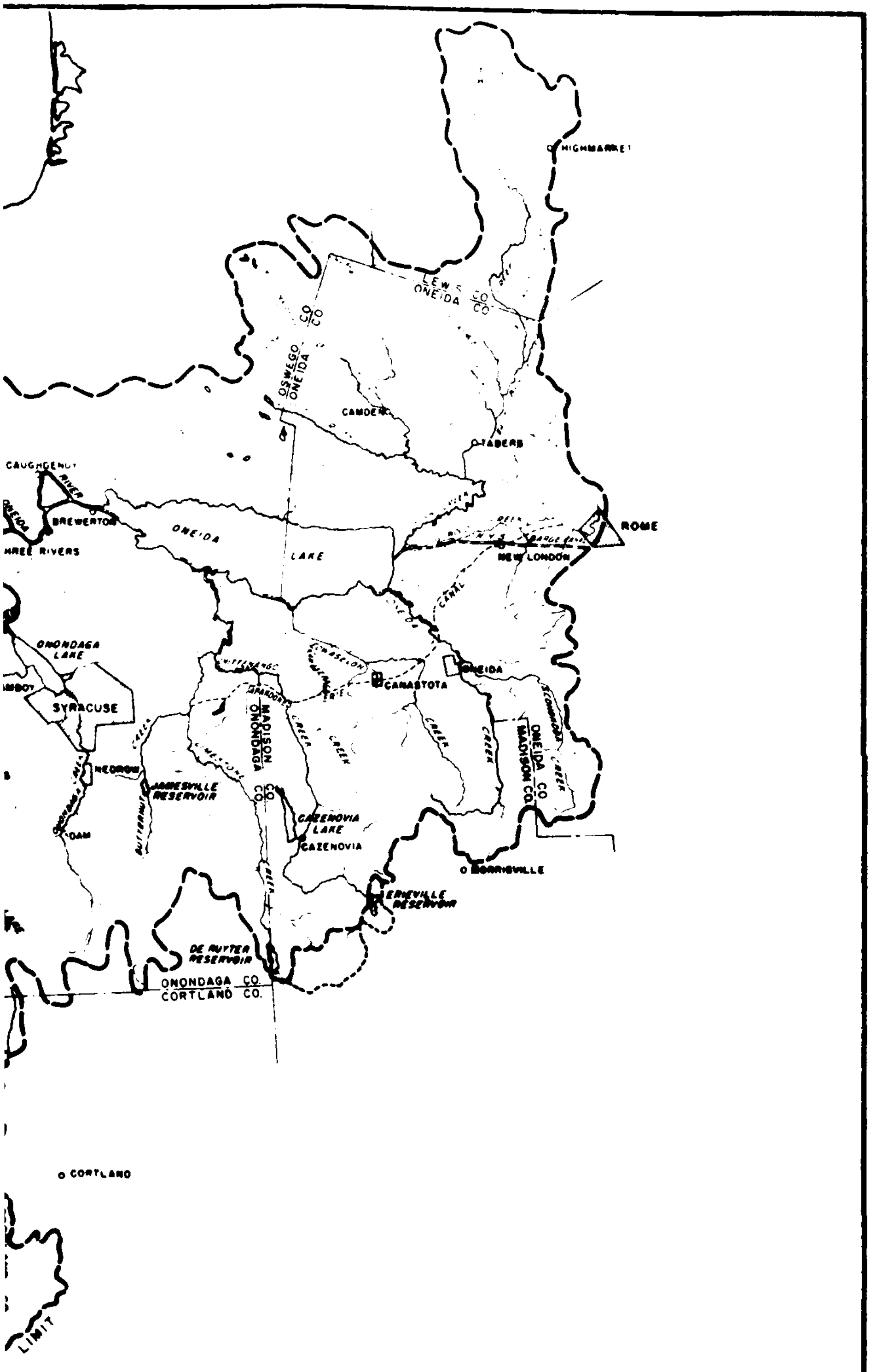
MONROE
CO
SODUS
OSWEGO
OSWEGO
CAYUGA
CO
CO
CAYUGA
WAYNE
CO
CO
OSWEGO
FULTON
CAUGHDENOY
RIVER
OSWEGO CO
ONONDAGA CO
THREE RIVERS
BALDWINSVILLE
SENECA
RIVER
CROSS LAKE
JORDAN
AMBOY
MACEDON
PALMYRA
NEWARK
LYONS
CLYDE
BARGE
CANAL
PORT BYRON
MONTEZUMA
WAYNE CO.
ONTARIO CO
WAYNE CO
SENECA CO
CANANDAIGUA OUTLET
SHORTSVILLE
CHAPIN
CANANDAIGUA
WATERLOO
SENECA FALLS
GENEVA
AUBURN
MARCELLUS
SKANEATELES
ONONDAGA CO.
CAYUGA CO
SKANEATELES LAKE
OTISCO LAKE
OWASCO LAKE
HEMLOCK
LAKE
CREEK
FLINT
ONTARIO CO
YATES CO
CANANDAIGUA
WEST RIVER
SENECA
CAYUGA
AURORA
MORAVIA
LOCKE
DRESDEN
KEUKA OUTLET
PENN YAN
NAPLES
YATES CO
STEUBEN CO
DANSVILLE
WEST BR KEUKA LAKE
LAKE
LAKE
LAKE
CAYUGA CO
TOMPKINS CO
GROTON
SENECA CO
SCHUYLER CO
TRUMANSBURG
CORTLAND CO
TOMPKINS CO
YATES CO.
SCHUYLER CO
LITTLE LAKE
LAMOKA LAKE
ITHACA
LIMIT
WATKINS GLEN
MONTOUR FALLS
WATERSHED
SCHUYLER CO



REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

BASIN MAP

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 2

EXTENT AND CHARACTER OF FLOOD DAMAGE AREAS

General

The Oswego River Basin is located in west-central New York. It has a total drainage area of 5,081 square miles. The basin is located over three physiographic areas. The Ontario lowland, about 20 miles wide and generally level about 400 to 500 feet above mean sea level, is located over the northern section of the basin. The northern margin of the Allegany Plateau covers most of the southern section of the basin with moderately steep slopes to an elevation of 2,000 feet and many valley filled lakes. Part of the Tug Hill Plateau covers the northeastern portion of the basin and has a uniform slope from and elevation of 400 to an elevation of 2,000 feet. The hydrographic character of the basin is controlled by the local geology. The geologic profile across the area is governed by the stratigraphy and erosional history, and by the modification of relief from glaciation.

New York State Barge Canal

The New York State Barge Canal crosses the northern portion of the basin. It was completed in 1918 and provides a 12-foot draft. Extensions have been made to Seneca, Cayuga, and Onondaga Lakes, and Lake Ontario via the Oswego River Canal. The canal system is regulated and maintained by the State of New York. The Barge Canal is shown on the general Oswego River Basin map (Plate 2).

Lakes

The Finger Lakes and Oneida Lake are the major lakes in the Basin. Drainage of the Finger Lakes is northward and channelled east into the Oswego River and then into Lake Ontario. Storage in these lakes reduce the peak flows downstream considerably.

Table 1 lists the pertinent data on selected lakes in the Oswego River Basin.

Table 1. - Pertinent Data on Lakes in the Oswego River Basin

Location	Drainage Area (Sq. Mi.) (1)	Lake Area (Sq. Mi.)	Purpose of Operation
Canandaigua Lake at Canandaigua	184	16.6	(2)
Cayuga Lake at Ithaca	1,564	66.9	(3)
Keuka Lake at Hammondsport	182	18.3	(4)
Oneida Lake at Brewerton	1,382	79.8	(3)
Onondaga Lake at Liverpool	285	4.7	(3)
Otisco Lake at Otisco Lake Dam	43	3.5	(5)
Owasco Lake near Auburn	205	10.6	(6)
Seneca Lake at Watkins Glen	704	67.6	(3)
Skaneateles Lake at Skaneateles	72.7	13.6	(7)

(1) Includes lake surface area.
(2) Water supply, City of Canandaigua and Villages of Newark and Palmyra.
(3) New York State Barge Canal.
(4) Operated for regulation of flow in Keuka Outlet for Power.
(5) Water supply, Onondaga County Water Authority.
(6) Water supply, City of Auburn.
(7) Water supply, City of Syracuse.

In addition to those listed, many small ponds are operated for water supply and recreation.

Rivers

The Seneca River, which is the largest tributary of the Oswego River, is 62 miles long and has a drainage area of 3,458 square miles.

It flows in a northeasterly direction from Seneca Lake to the community of Three Rivers. The river is canalized throughout, with its fall of 82 feet having been concentrated at five dams equipped with locks. Three of these locks, whose combined lift equals 63.5 feet, are in the 11 miles between Seneca Lake and Seneca Falls. Above Seneca Falls, the dam at Waterloo controls the level of Seneca Lake; below Seneca Falls, the dam at Mud Lock controls the level of Cayuga Lake.

The Clyde River, largest of the Seneca River tributaries, is formed by the junction of Canandaigua Outlet and Ganargua Creek at Lyons, 19 miles above the Seneca River. The total drainage area is 895 square miles, of which 309 are drained by Ganargua Creek and 445 by Canandaigua Outlet.

The Oneida River combines with the Seneca River at Three Rivers to form the Oswego River. It has a drainage area of 1,474 square miles. It is 18 miles long and meanders in a westerly direction from Oneida Lake to Three Rivers. Parts of the river have been canalized and combined with land cuts across bends to form a 9-mile long canal between the same points.

The Oswego River is formed by the junciton of the Seneca and Oneida Rivers at Three Rivers. From this junction it flows 23 miles northwest to Lake Ontario at the City of Oswego. The river has been canalized and has a fall of 188 feet concentrated at seven sites by dams and locks.

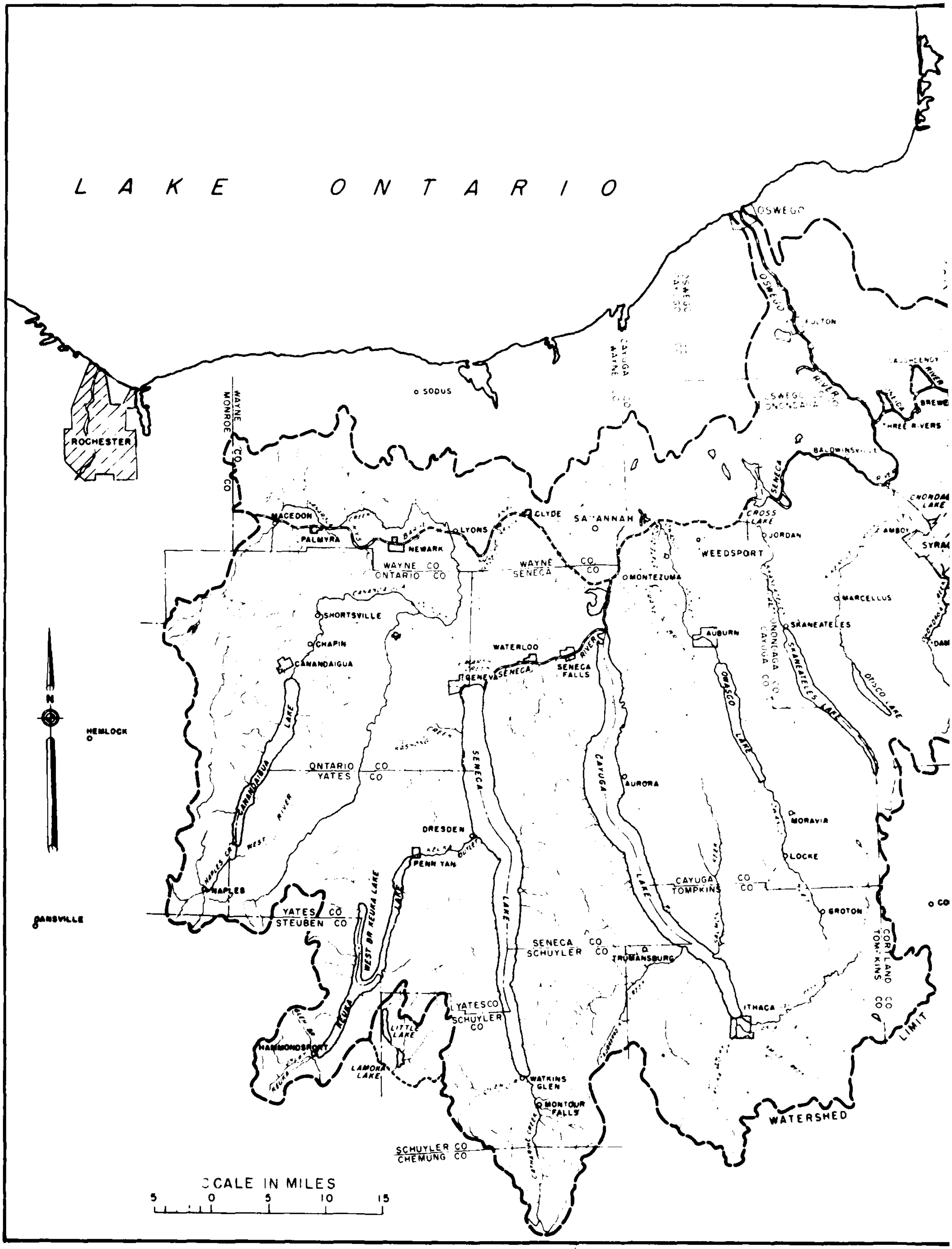
Areas Subject to Flooding

The areas subject to flooding along the Barge Canal and the lake outlets are shown on Plates 38 through 52. Plate 3 is an index map that shows the location of these flooded area maps. Primary flooding in the Oswego River Basin occurs at headwater areas where the

tributary drainage area is 200 square miles or less. Stream slopes are steep resulting in unusually high velocities. This type of flooding occurs over large sections of the basin in springtime due to the addition of snowmelt. Highest peaks occur in the summer over small areas that are affected by localized storms. Principal damage is to agricultural and pasture land.

Flood stages in the lakes are reduced due to their regulation, but remain for a longer period of time. Principal damage is to docks, marinas, and cottages. Towns at the inlets and outlets of the lakes are generally built up, and most of the damage is to low lying recreational and commercial establishments.

Flooding is usually severe at the confluence of lake outlets with the Barge Canal. Here overland flooding extends primarily to some of the most productive agricultural areas in New York State.



LAKE ONTARIO
ROCHESTER
HEMLOCK
DANSVILLE
SODUS
OSWEGO
FULTON
BALDWINSVILLE
THREE RIVERS
CROSS LAKE
JORDAN
WEEDSPORT
MONTEZUMA
SAVANNAH
CLYDE
LYONS
NEWARK
PALMYRA
MACEDON
WAYNE CO
MONROE CO
WAYNE CO
ONTARIO CO
WAYNE CO
SENECA CO
SHORTSVILLE
CHAPIN
CANANDAIGUA
CANANDAIGUA LAKE
NAPLES
ONTARIO CO
YATES CO
YATES CO
STEUBEN CO
WEST RIVER
WATERLOO
GENEVA
SENECA FALLS
SENECA RIVER
SENECA LAKE
CAYUGA LAKE
DRESDEN
PENN YAN
KEUKA LAKE
WEST BR KEUKA LAKE
HAMMONDSPORT
LAMOKA LAKE
LITTLE LAKE
YATES CO
SCHUYLER CO
SENECA CO
SCHUYLER CO
WATKINS GLEN
MONTOUR FALLS
SCHUYLER CO
CHEMUNG CO
TRUMANSBURG
ITHACA
AURORA
AUBURN
OWASCO LAKE
SKANEATELES
SKANEATELES LAKE
MARCELLUS
OTISCO LAKE
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CAYUGA CO
MORAVIA
LOCKE
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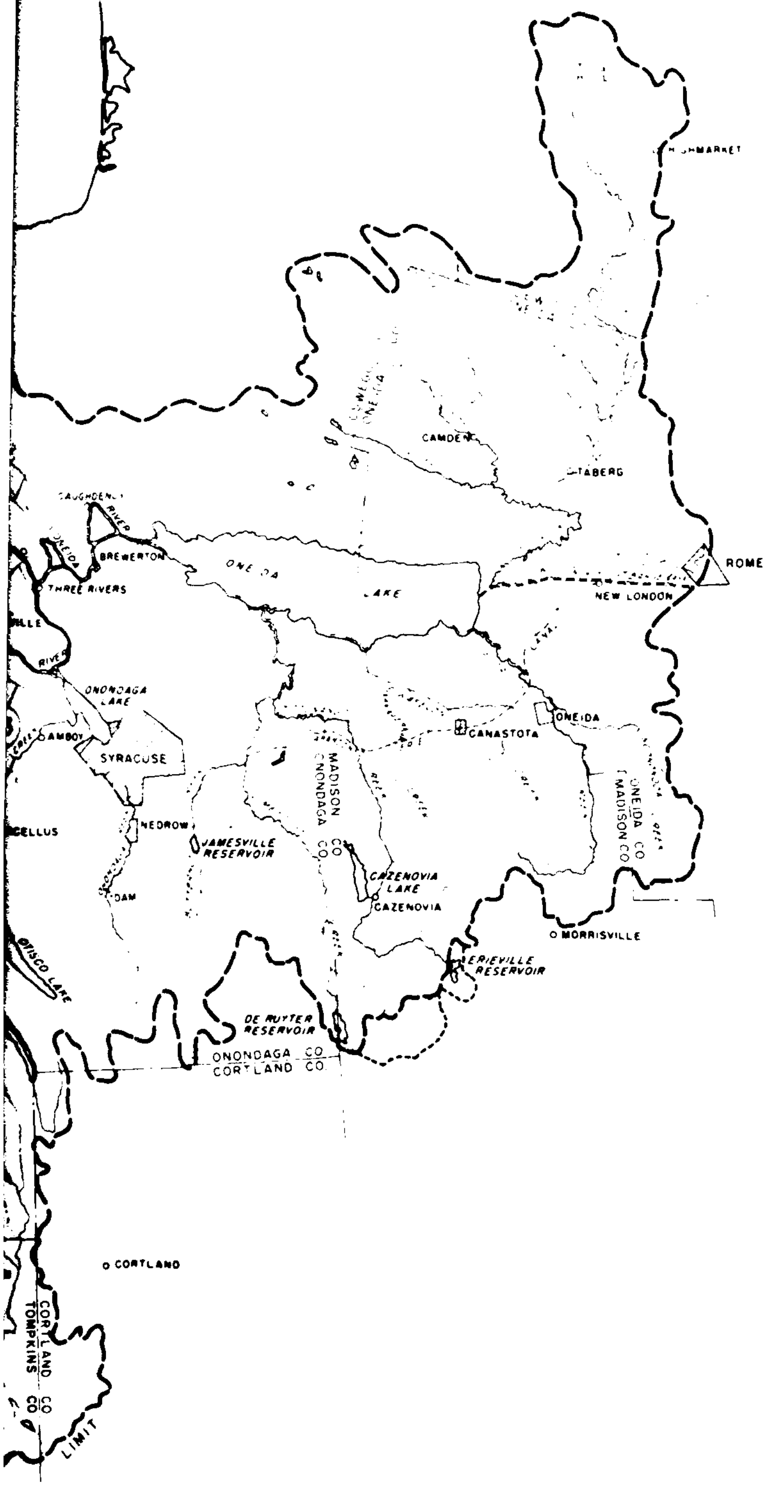


PLATE

OSWEGO

FULTON

PHOENIX

THREE RIVERS

ONEIDA RIVER
BREWERTON

SENECA RIVER
BALDWINSVILLE

SENECA RIVER
CROSS LAKE

SENECA RIVER
WEEDSPORT

SENECA RIVER
SAVANNAH

CLYDE AND SENECA RIVERS
CLYDE

SENECA RIVER
WATERLOO

CLYDE RIVER
CLYDE-LYONS

NEW YORK STATE BARGE CANAL
LYONS

NEW YORK STATE BARGE CANAL
NEWARK

NEW YORK STATE BARGE CANAL
PALMYRA

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

INDEX OF FLOODED AREA MAPS

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

DAMAGES

After the flood, Buffalo District personnel were sent into the field to assess the amounts and types of flood damage and obtain high water marks and other pertinent data. Extensive interviewing of residential, and commercial units were performed where possible. Because many of the units along the various waterways of the Oswego River Basin, including the Finger Lakes, are seasonal, some difficulty was encountered in contacting the owners of the homes. Public damage estimates were made by inspection of damage survey reports prepared for OEP and by interviewing various public officials and Government agencies. Detailed damage analyses were performed for reaches along the New York State Barge Canal and for the various lakes. Total estimated damages for the Oswego River Basin are listed in Table 2. Agricultural damage estimates were prepared by the U. S. Department of Agriculture, Soil Conservation Service. The limits of the agricultural and non-agricultural damage reaches are shown on Plates 4 and 5, respectively.

Agricultural Damages

The Oswego River Basin had the heaviest total crop damages reported by the County Disaster Committees in the Buffalo District area. Of these, the greatest damages due to inundation occurred in the intensively cropped mucklands in central New York. The worst of these damages occurred along the Seneca River and tributaries in the Savannah-Montezuma area of Wayne, Cayuga, and Seneca Counties, where the dikes failed or were overtopped. The potato crop loss alone in this area was estimated at $4,000,000; snap beans $800,0000; and corn $375,000 (gross market values).

Table 2. - Total Estimated Damage from June 1972 Flood in the Oswego River Basin

Location	Residential	Commercial	Public and Other (1)	Agricultural (2)	Total
	$	$	$	$	$
Barge Canal	959,000	611,000	546,000		2,116,000
Canandaigua Lake	308,000	1,152,000	49,000	Included	1,509,000
Cayuga Lake	614,000	825,000	268,000		1,707,000
Keuka Lake	722,000	392,000	109,000	in	1,223,000
Oneida Lake	664,000	777,000	59,000		1,500,000
Onondaga Lake	-	-	375,000	County	375,000
Otisco Lake	29,000	-	52,000		81,000
Owasco Lake	167,000	6,000	42,000	Totals	215,000
Seneca Lake	417,000	657,000	364,000		1,438,000
Skaneateles Lake	77,000	68,000	23,000		168,000
Cayuga County			3,492,000	4,469,000	7,961,000
Chemung County	Included in		92,000	68,000	160,000
Madison County			344,000	3,738,000	4,082,000
Oneida County	the		384,000	211,000	595,000
Onondaga County			768,000	1,685,000	2,453,000
Ontario County	Lake and Barge		699,000	5,546,000	6,245,000
Oswego County			65,000	2,140,000	2,205,000
Schuyler County	Canal Totals		651,000	452,000	1,103,000
Seneca County			53,000	1,220,000	1,273,000
Stueben County			897,000	507,000	1,404,000
Tompkins County			1,217,000	445,000	1,662,000
Wayne County			14,000	6,025,000	6,039,000
Yates County			1,109,000	4,027,000	5,136,000
TOTAL	3,957,000	4,488,000	11,672,000	30,533,000	50,650,000

(1) Includes damage reported to OEP.
(2) Furnished by U. S. Department of Agriculture, Soil Conservation Service. Includes damages due to inundation and extensive loss of field and cash crops due to excessive rain.

Other muck areas were also severely damaged. At Port Byron, one grower estimated his loss at $150,000, mostly potatoes; the Potter muck on Flint Creek, with potatoes, carrots, cabbage, a turf crop valued at $200,000 and field corn almost completely wiped out; Six Mile Creek and Black Creek in Oswego County suffered loss of the lettuce and broccoli crops. Madison County reported loss of potatoes and onions on muckland areas.

The majority of the livestock losses occurred along Seneca River in Cayuga County and Fish Creek and Mad River in Oneida County. Machinery and equipment losses occurred principally in Cayuga County reaches of the Seneca River and in Ontario County along Flint Creek.

The principal counties in amount of crop damages in this basin are Wayne, Ontario, Yates, Cayuga, and Madison Counties. These counties also reported the major land damages which include erosion, sediment deposition, and filling of ditches and outlets with debris and sediment. Cayuga, Wayne, and Ontario Counties reported the greatest land damages.

Cortland and Lewis Counties have only very small areas in the headwaters of the basin and reported no specific damages.

The Savannah-Montezuma Mucklands

The June 1972 flood overtopped and broke through the dikes on the South and East Muck at Savannah and the Lopez Muck to the west. Crop losses were heavy. Water depths over the muck were estimated to be 5 to 7 feet for several days. Not all of the muckland is diked, however.

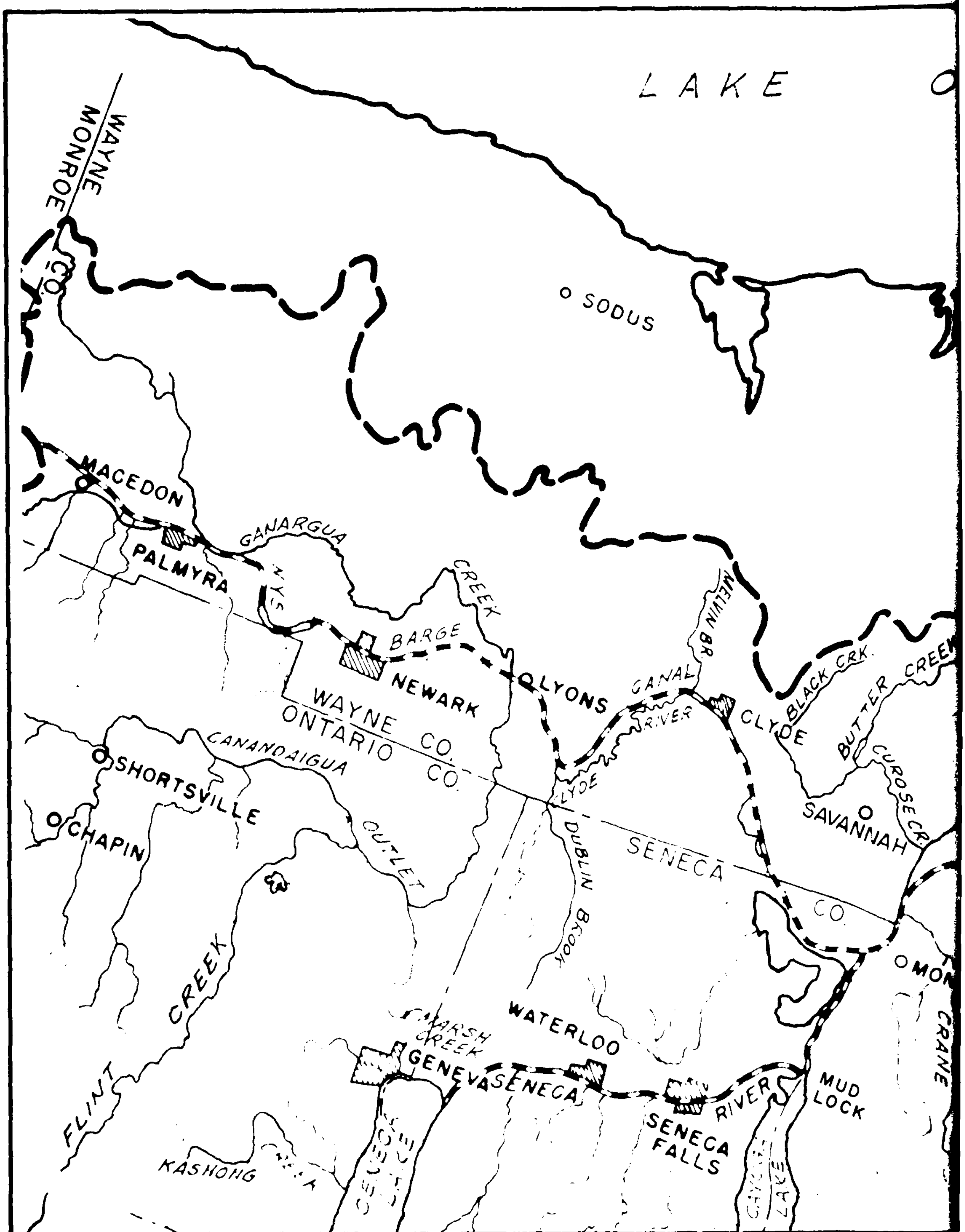
The value of the crops lost in this area was estimated locally at over $5 million, based on the potential gross market value. This does

not discount for saved costs, such as harvest, storage and marketing costs, so it does not reflect the net loss to the producer. The gross market value does, however, indicate the impact on the overall economy of the area. Had a normal crop been harvested, the spending for the labor and services involved in harvesting, storage and marketing would have entered the local circulation.

Total agricultural damages for the Oswego River Basin are tabulated in Table 3.

Table 3. - Total Estimated Agricultural Damage from the June 1972 Flood in the Oswego River Basin

County	Totals	Crops	Land	Buildings	Livestock	Fences	Machinery and Equipment
	$	$	$	$	$	$	$
Cayuga	4,469,000	3,000,000	1,300,000	45,000	10,000	19,000	95,000
Chemung	68,000	50,000	10,000	5,000	-	1,000	2,000
Cortland	-	-	-	-	-	-	-
Lewis	-	-	-	-	-	-	-
Madison	3,738,000	2,987,000	750,000	-	1,000	-	-
Oneida	211,000	100,000	100,000	-	10,000	1,000	-
Onondaga	1,685,000	1,460,000	210,000	10,000	1,000	4,000	-
Ontario	5,546,000	4,500,000	1,000,000	-	-	18,000	28,000
Oswego	2,140,000	1,950,000	190,000	-	-	-	-
Schuyler	452,000	400,000	50,000	-	-	1,000	1,000
Seneca	1,220,000	1,100,000	118,000	-	-	2,000	-
Steuben	507,000	300,000	200,000	5,000	-	2,000	-
Tompkins	445,000	440,000	4,000	-	-	1,000	-
Wayne	6,025,000	5,000,000	1,000,000	25,000	-	-	-
Yates	4,027,000	3,395,000	600,000	31,000	-	1,000	-
TOTAL	30,533,000	24,682,000	5,532,000	121,000	22,000	50,000	126,000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CLYDE
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CUROSE CR.
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SENECA CO.
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DUBLIN BROOK
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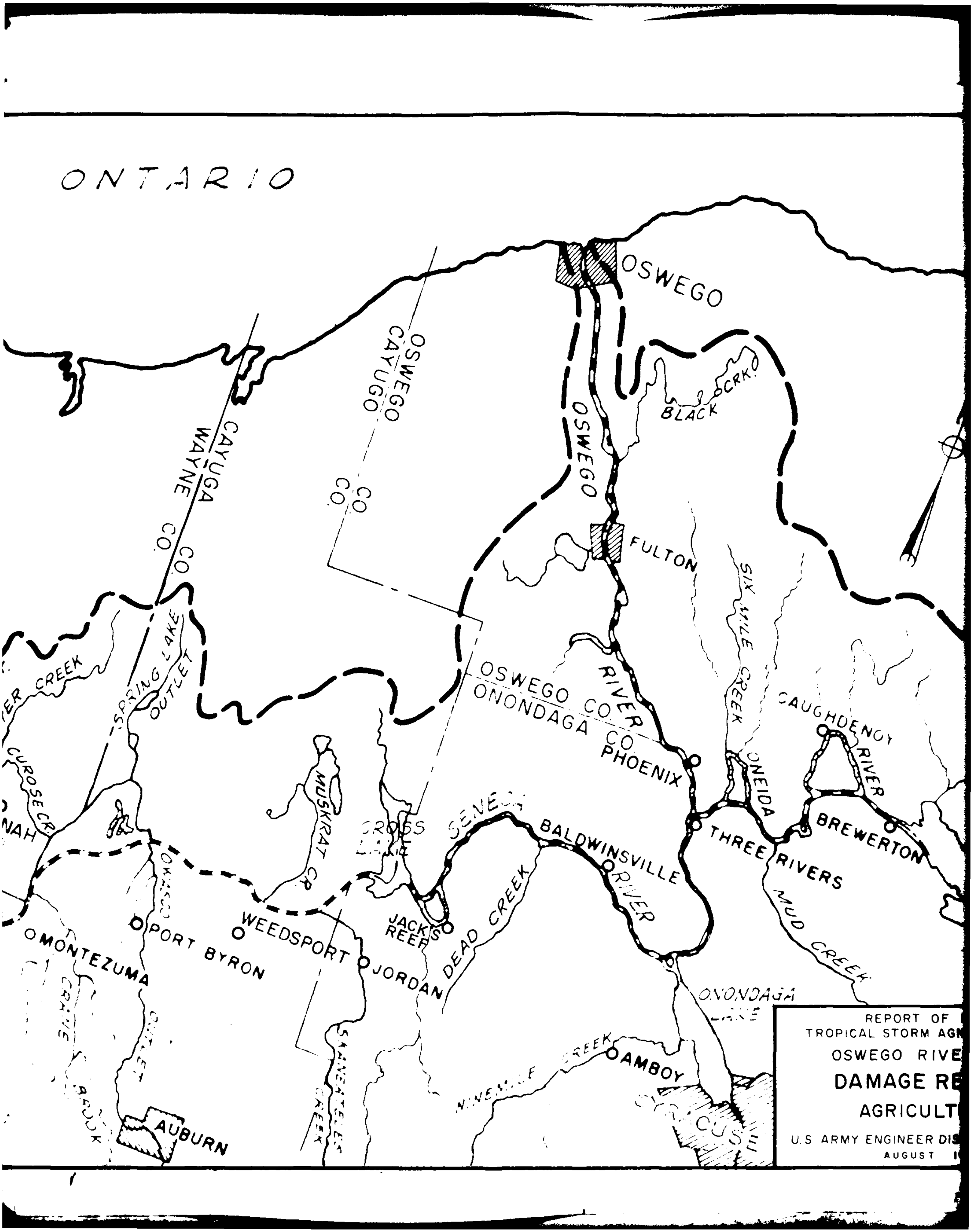
LAKE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PHOENIX
CAUGHDENOY
RIVER
ONEIDA
THREE RIVERS
BREWERTON
MUD CREEK
SENECA
BALDWINSVILLE
RIVER
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MUSKRAT CR
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DEAD CREEK
MONTEZUMA
PORT BYRON
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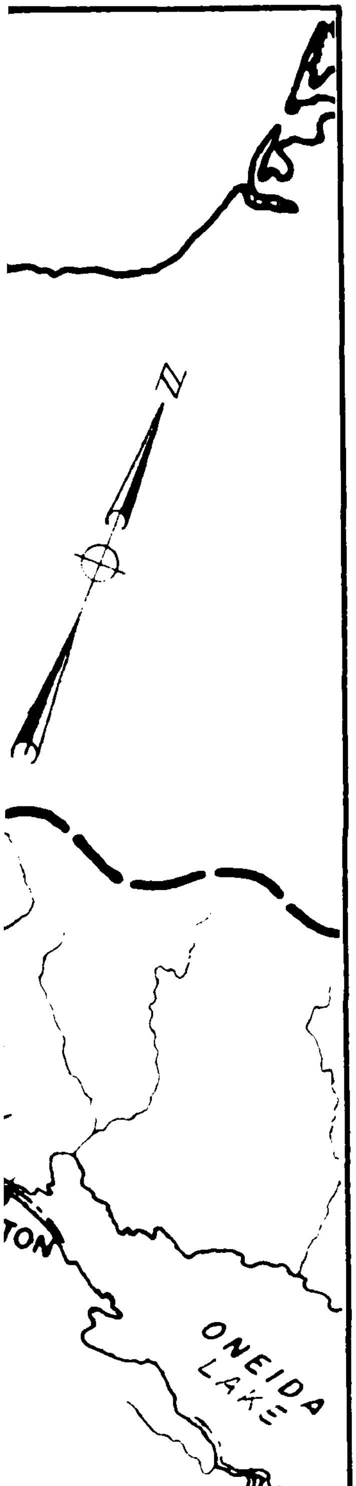

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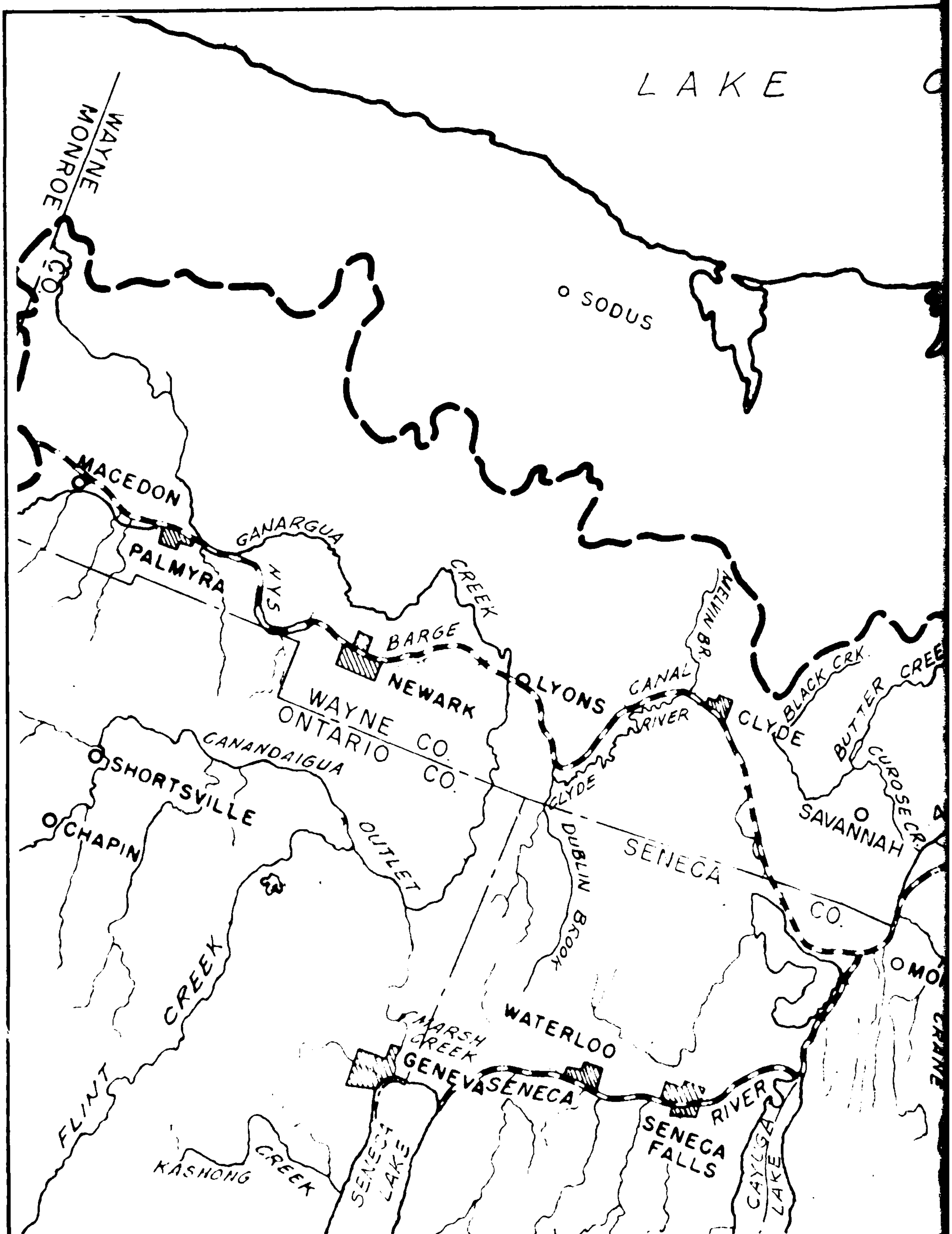
PLATE 4



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BUTTER CREE
CUROSE CR.
SAVANNAH
WAYNE CO.
ONTARIO CO.
SENECA CO.
CLYDE
DUBLIN BROOK
SHORTSVILLE
CHAPIN
CANANDAIGUA
OUTLET
FLINT CREEK
MARSH CREEK
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GENEVA
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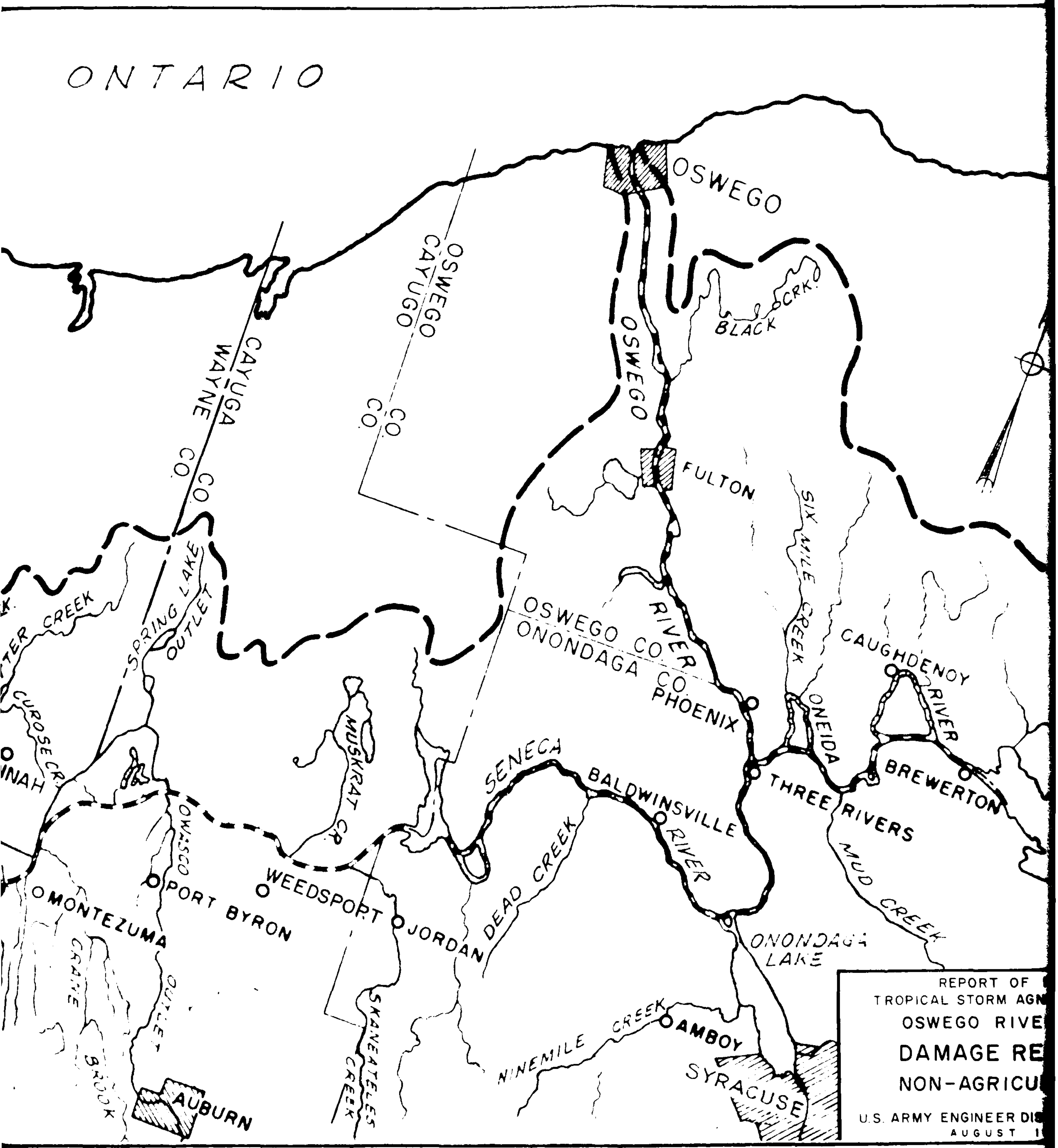
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OSWEGO CO.
ONONDAGA CO.
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SIX MILE CREEK
CAUGHDENOY
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ONEIDA
BREWERTON
THREE RIVERS
SENECA
BALDWINSVILLE
RIVER
MUSKRAT CR
MUD CREEK
DEAD CREEK
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OWASCO OUTLET
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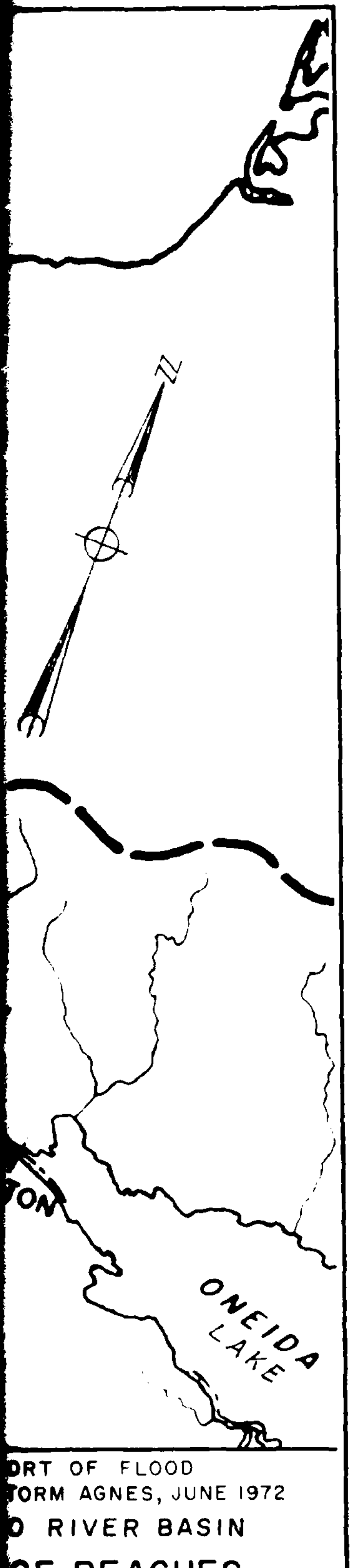

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TORM AGNES, JUNE 1972
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PLATE 5

CLIMATOLOGY

Major Storms

Flooding may occur in the Oswego River Basin at anytime of the year. High flows occur nearly every spring from a combination of snowmelt and rainfall. Summer storms usually affect small portions of the basin. Floods in the basin are of three types. The first type occurs in the headwaters of the basin and has relatively high peaks of short duration. The second and third types of flooding are interrelated. The second type of flooding occurs on the lakes and controlled canal reaches. The duration of flooding is usually for several days. The third type of flooding occurs downstream of the lakes. The peaks are usually low and of long duration due to upstream regulations of control structures. The latter two flood types usually occur in the spring.

Available meteorological data of record storms over the Oswego River Basin are listed in Table 4.

Table 4. - Storms of Record

Storm Period	Average Precipitation (inches)
7-8 July 1935	5.2 inches
27-31 December 1942	4.2 inches
13-19 October 1955	4.4 inches
21-26 June 1972	5.8 inches

Storm of July 1935 - Prior to Agnes, this flood caused the greatest damage of any single flood. Primary damage areas were in the headwaters of the western part of the basin, but record levels were reached in Seneca and Cayuga Lakes. Monthly rainfall from 9 to 16 inches was reported at 18 stations in the central lakes areas. Plate 6 shows the isohyetal maps of 7-8 July rainfall with an average of 5.2 inches during the two-day period.

Storm of December 1942 - Heavy rainfall on snow covered frozen ground resulted in severe flooding over most of the Oswego River Basin.

Plate 7 shows the isohyetal pattern for the period 27-31 December 1942. Average basin precipitation for the storm was 4.2 inches.

Storm of October 1955 - Record setting precipitation fell over the western and central sections of the Oswego River Basin. Monthly precipitation exceeded 20 inches at a number of stations. Plate 8 shows the precipitation for the period 13-17 October 1955. Average basin precipitation was 4.4 inches.

Storm of 20-25 June 1972 ("Agnes") - The most destructive, widespread flooding of record over the eastern United States was the result of a tropical depression that developed near Cozumel, off the Yucatan Coast of Mexico on the 15th of June. This depression was to intensify and become Hurricane "Agnes" by the time its center hit the Florida Panhandle on the afternoon of 19 June. Moving northeast through Georgia and South Carolina, "Agnes" soon weakened to depression stage. This large, weak depression produced torrential rains in the Carolina mountains on the 20th. Continuing on its northeasterly path, "Agnes" was rejuvenated to tropical storm stage as it moved closer to the Atlantic near Norfolk, Virginia, on 21 June. Over the Atlantic, the moisture-laden Gulf air in Agnes was replenished. Late on the 22nd, the storm center veered westerly and passed over the Southern Tier of New York State where it was absorbed by a broad, deep extratropical low pressure system. This large system continued to dominate the weather over the northeast for the next several days. Plate 11 shows the path of "Agnes" from 19-26 June 1972. The result of this activity was very heavy rains over most of the northeast. The maximum recorded total storm rainfall was 16.00 inches with a maximum daily rainfall of 13.5 inches on the 22nd at York, PA. York, PA, is approximately 160 miles south of the Oswego River Basin. During the week prior to tropical storm "Agnes," moderate rainfall occurred over

the State of New York. Approximately 1.5 inches of rainfall occurred from 14-20 June on the Oswego River Basin. Consequently, above normal soil moisture content increased and accelerated runoff.

Tropical storm "Agnes" and associated weather systems caused heavy rainfall starting on the morning of the 21st, in the Oswego River Basin. By noon of the 21st, 2 inches of rainfall had fallen over most sections of the basin. Heaviest rainfall occurred in the southwestern and northeastern corners of the basin. The predominant portion of the rainfall occurred from 6 a.m. of the 21st to midnight of the 22nd of June. Occasional showers continued through the 25th of June. In the Oswego River Basin the maximum recorded total storm rainfall was 9.91 inches at Hector, NY, and the maximum daily amount was 5.37 inches on the 22nd at Camden, NY. A "bucket survey" of the Oswego River Basin by the Buffalo District personnel shows that there were a number of local areas with rainfall in excess of ten inches.

Three and six-day isohyetal maps for the basin were obtained using National Weather Service (N.W.S.) data and the most reliable bucket survey data. The isohyets were drawn with emphasis placed on the N.W.S. data (see plates 9 and 10). Table 5 shows the N.W.S. data used, the greatest daily, three-day and six-day rainfall for each station. These figures cannot be compared directly as the times of the observation at the various stations were not recorded simultaneously. Average basin rainfall for three and six-day periods are 5.4 inches and 5.8 inches, respectively.

A mass rainfall analysis was done for selected rainfall stations within the Oswego River Basin. Plate 12 shows these curves. Comparative rainfall intensities can be seen over various sections of the basin.

Table 5. - Precipitation for the 21-26 June 1972 Storm

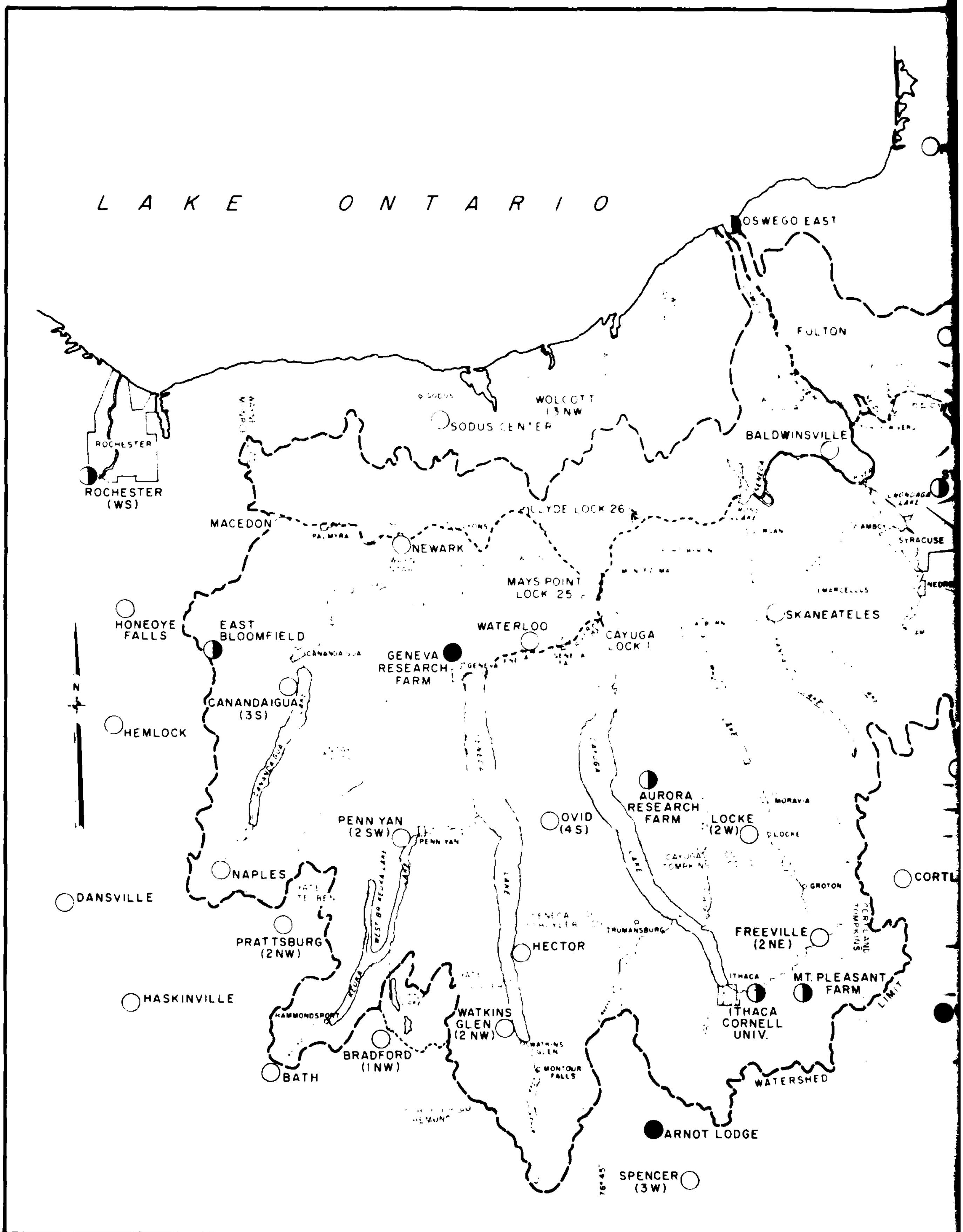
Station	County	Greatest Day: Inches	Greatest Day: Day	21-23 June 3-Day (Inches)	21-26 June 6-Day (Inches)
Arnot Lodge	Schuyler	N/A		5.88	5.93
Aurora Research Farm	Cayuga	3.25	22	5.99	6.84
Baldwinsville	Onondaga	1.54	22	2.87	4.05
Bath	Steuben	3.90	23	9.22	9.65
Bennett Bridge	Oswego	2.34	22	3.22	3.97
Boonville (2 SSW)	Oneida	2.22	22	3.80	4.01
Bradford (1 NW)	Steuben	4.72	22	9.19	9.62
Brewerton Lock 23	Onondaga	1.75	22	3.56	4.12
Camden (2 NW)	Oneida	5.37	22	7.02	8.25
Canastota	Madison	3.01	22	4.02	4.23
Canandaigua (3 S)	Ontario	N/A		4.02	4.11
Cayuga Lock 1	Cayuga	1.39	22	3.38	3.80
Clyde Lock 26	Wayne	1.60	22	3.63	4.52
Cortland	Cortland	2.41	22	4.03	4.63
Dansville	Livingston	3.00	23	7.46	7.79
Delta	Oneida	2.90	22	3.30	4.32
DeRuyter (4 N)	Madison	3.15	22	4.29	4.77
East Bloomfield	Ontario	2.75	23	4.67	5.27
Freeville (2 NE)	Tompkins	3.58	22	5.28	6.04
Fulton	Oswego	1.74	21	3.35	3.62
Geneva Research Farm	Ontario	2.32	22	5.35	5.85
Griffiss AFB	Oneida	1.64	22	3.75	3.86
Haskinville	Steuben	4.50	21	10.22	10.83
Hector	Schuyler	3.56	21	9.83	9.91

Table 5. - Precipitation for the 21-26 June 1972 Storm (Cont'd)

Station	County	Greatest Day Inches	Greatest Day Day	21-23 June 3-Day (Inches)	21-26 June 6-Day (Inches)
Hemlock	Livingston	2.85	23	5.59	6.14
Highmarket	Lewis	5.13	22	6.14	6.75
Honeoye Falls	Monroe	2.68	23	4.46	4.71
Hunts Corners	Cortland	2.50	21	5.30	5.50
Ithaca Cornell U.	Tompkins	3.55	22	6.38	6.72
Locke (2 W)	Cayuga	3.25	22	5.01	5.81
Macedon	Wayne	3.25	23	3.38	4.15
Mallory	Oswego	1.48	21	3.92	4.39
Mays Point Lock 25	Seneca	1.34	22	3.00	3.32
Morrisville	Madison	3.86	22	4.34	5.05
Mt. Pleasant Farm	Tompkins	3.88	23	6.46	7.24
Naples	Ontario	3.56	23	8.44	8.85
Newark	Wayne	2.00	22	4.95	5.57
New London Lock 22	Oneida	4.04	22	4.75	5.38
Oswego East	Oswego	1.06	21	2.68	2.86
Ovid (4 S)	Seneca	3.56	23	7.97	8.09
Penn Yan (2 SW)	Yates	3.75	21	8.47	8.59
Prattsburg (2 NW)	Steuben	3.69	22	10.10	10.52
Pulaski	Oswego	1.33	22	3.11	3.30
Rochester WS	Monroe	2.15	22	3.95	4.12
Skaneateles	Onondaga	2.78	22	4.96	5.57
Sodus Center	Wayne	1.70	22	3.81	4.24
Spencer (3 W)	Chemung	2.79	21	6.30	6.57
Syracuse WS	Onondaga	3.60	21	5.65	5.72
Truxton	Cortland	2.67	22	3.90	4.49
Tully-Heiburg Forest	Cortland	2.21	22	4.48	4.94

Table 5. - Precipitation for the 21-26 June 1972 Storm (Cont'd)

Station	County	Greatest Day Inches	Greatest Day Day	21-23 June 3-Day (Inches)	21-26 June 6-Day (Inches)
Turin (1 N)	Lewis	3.75	22	4.31	4.79
Utica FAA AP	Oneida	1.53	22	4.08	4.39
Waterloo	Seneca	1.91	22	4.03	4.50
Watkins Glen (2 NW)	Schuyler	3.10	22	6.51	6.83
Wolcott (3 NW)	Wayne	1.27	22	2.87	3.77



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FULTON
WOLCOTT (3NW)
SODUS CENTER
BALDWINSVILLE
ROCHESTER
ROCHESTER (WS)
MACEDON
PALMYRA
NEWARK
CLYDE LOCK 26
SYRACUSE
MAYS POINT LOCK 25
HONEOYE FALLS
EAST BLOOMFIELD
WATERLOO
CAYUGA LOCK 1
SKANEATELES
GENEVA RESEARCH FARM
CANANDAIGUA
CANANDAIGUA (3S)
HEMLOCK
AURORA RESEARCH FARM
MORAVIA
PENN YAN (2SW)
PENN YAN
OVID (4S)
LOCKE (2W)
LOCKE
NAPLES
DANSVILLE
CORTL
GROTON
PRATTSBURG (2NW)
TRUMANSBURG
FREEVILLE (2NE)
HECTOR
ITHACA
MT. PLEASANT FARM
HASKINVILLE
HAMMONDSPORT
WATKINS GLEN (2NW)
ITHACA CORNELL UNIV.
BRADFORD (1NW)
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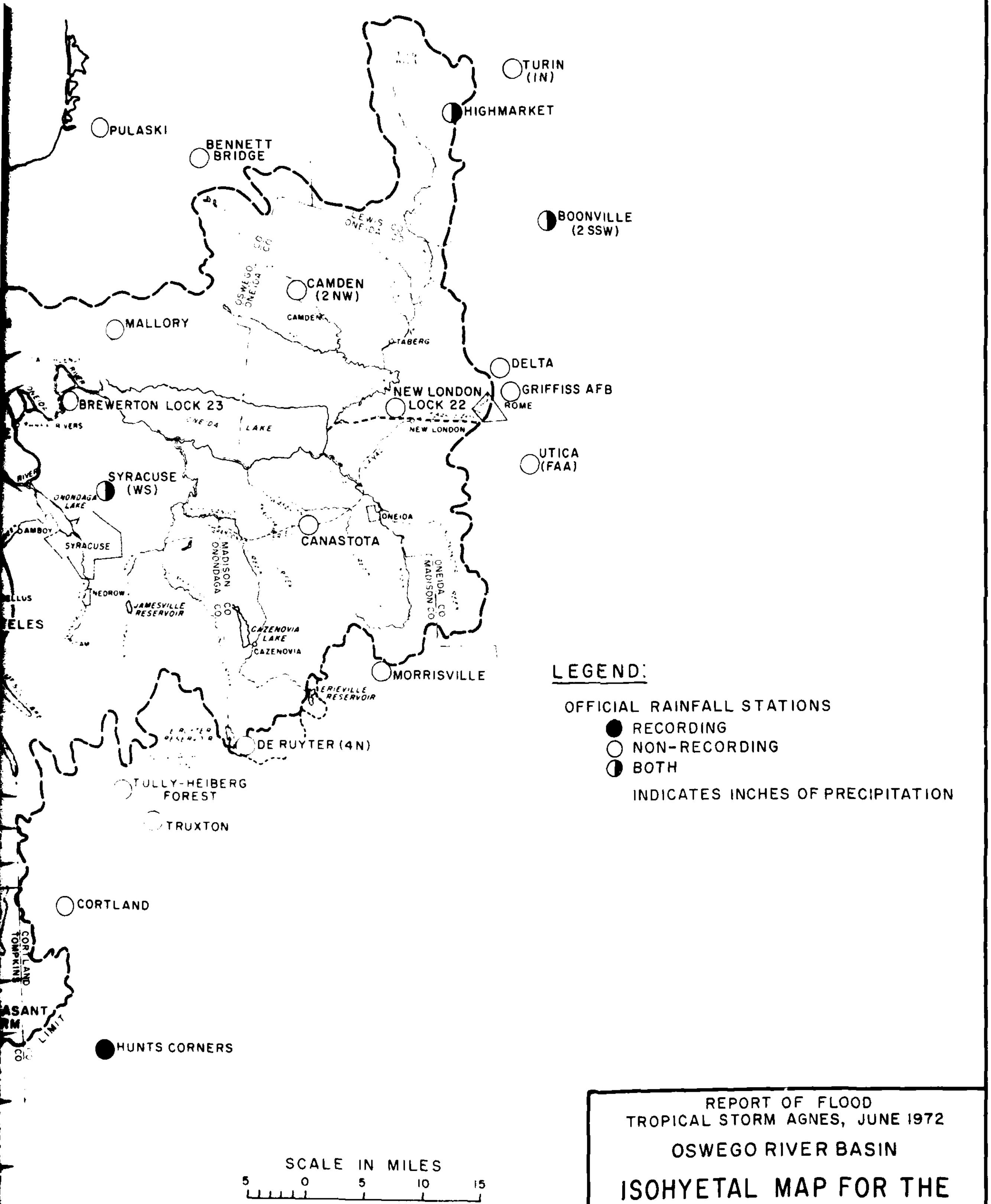
SPENCER (3W)



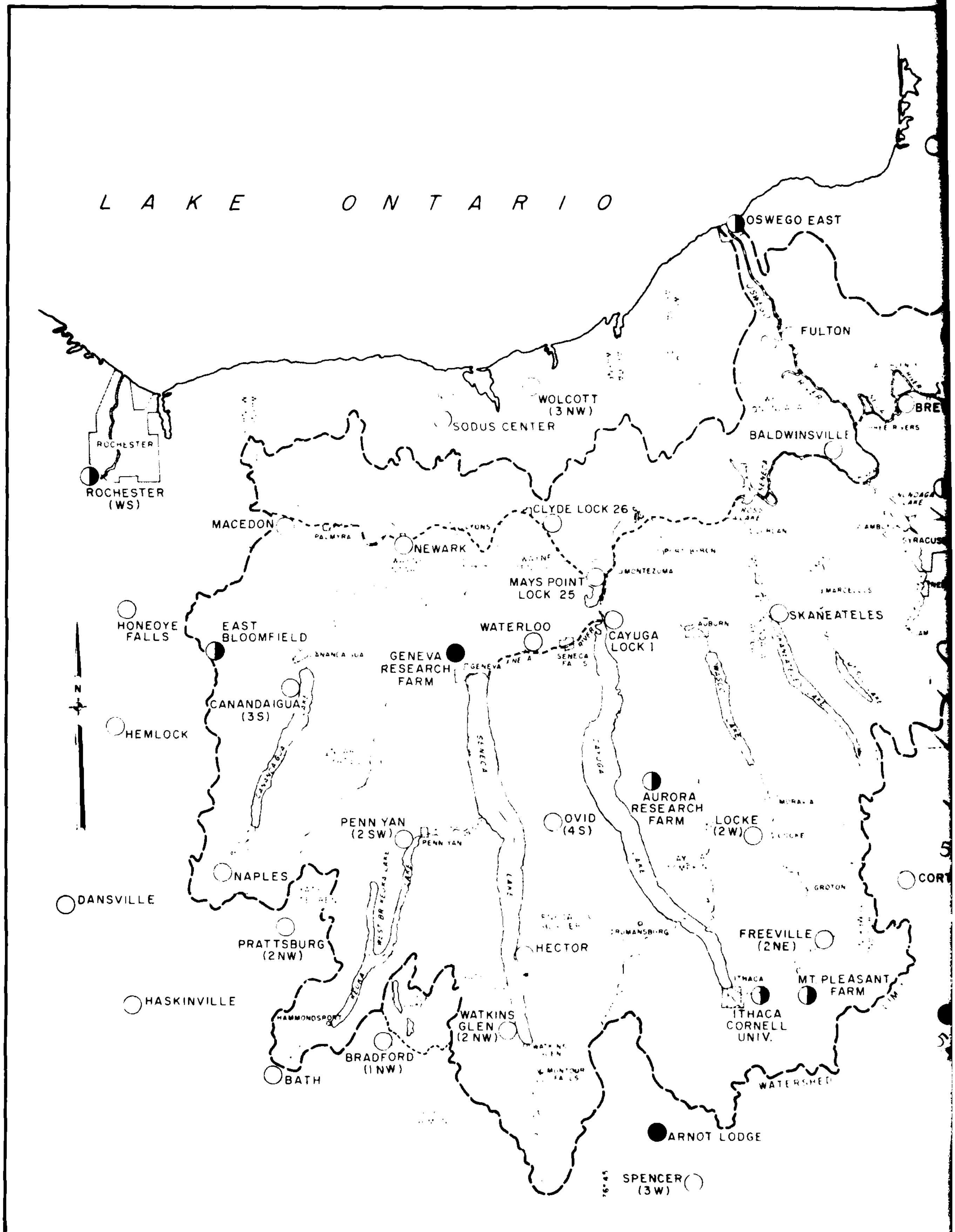
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

ISOHYETAL MAP FOR THE STORM OF 7-8 JULY 1935

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 6



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NEWARK
MAYS POINT LOCK 25
HONEOYE FALLS
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GENEVA RESEARCH FARM
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CAYUGA LOCK 1
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CANANDAIGUA (3S)
HEMLOCK
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PENN YAN (2 SW)
OVID (4S)
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PRATTSBURG (2NW)
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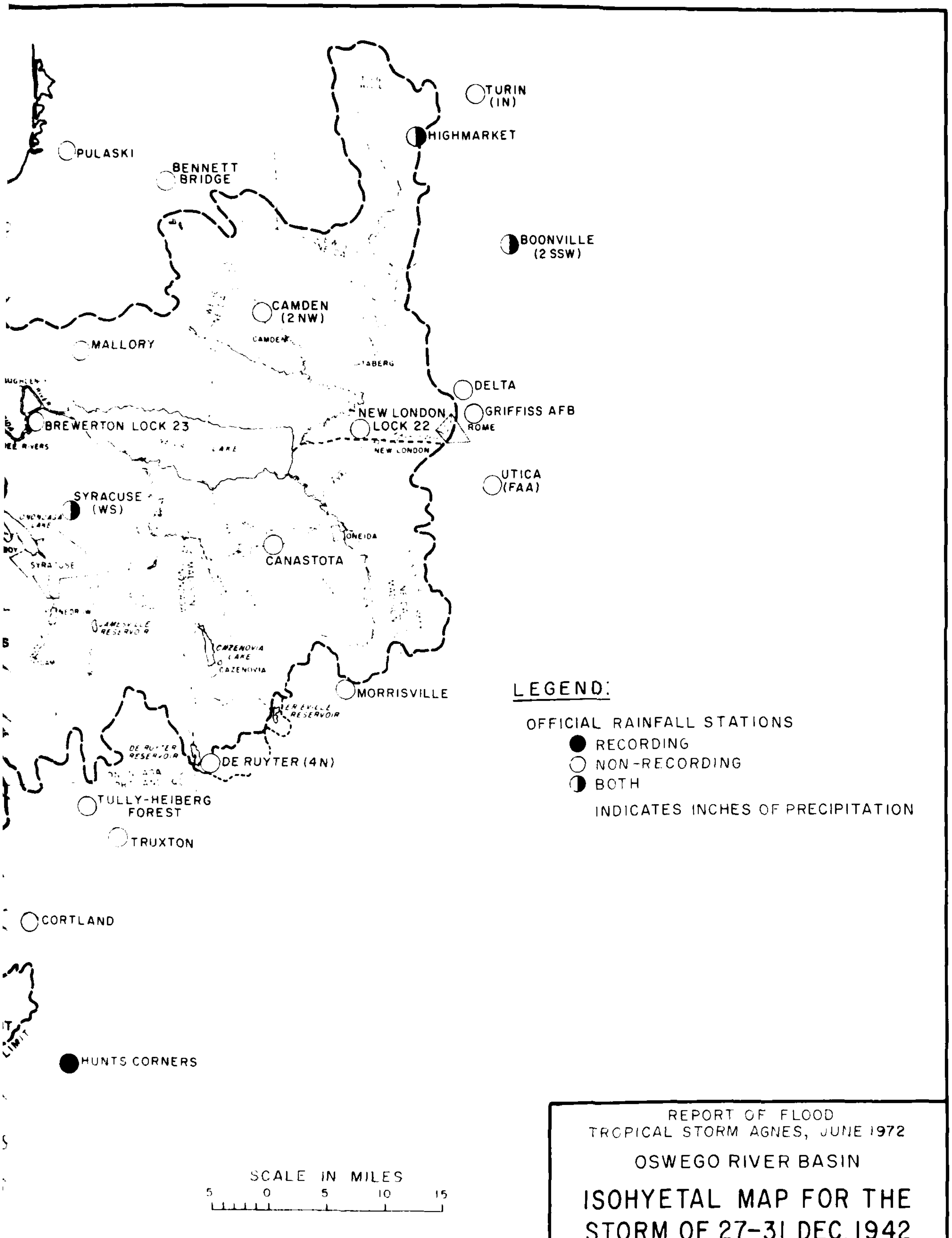


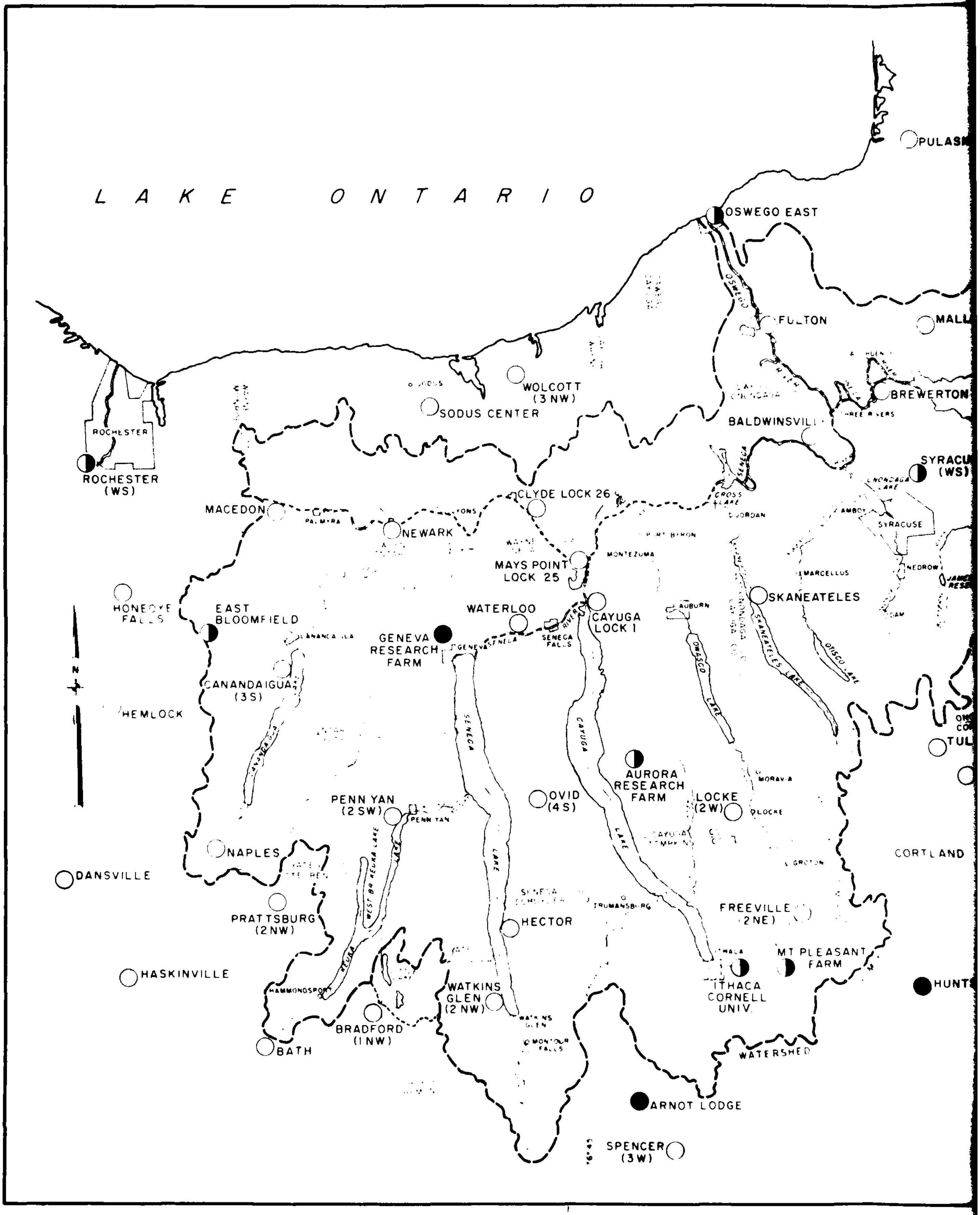
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

ISOHYETAL MAP FOR THE STORM OF 27-31 DEC. 1942

U S ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 7



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THREE RIVERS
ROCHESTER
ROCHESTER (WS)
SYRACUSE (WS)
SENECA
CROSS LAKE
CLYDE LOCK 26
MACEDON
PALMYRA
NEWARK
JORDAN
AMBOY
SYRACUSE
PORT BYRON
MONTEZUMA
MAYS POINT LOCK 25
MARCELLUS
NEDROW
HONEOYE FALLS
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GENEVA
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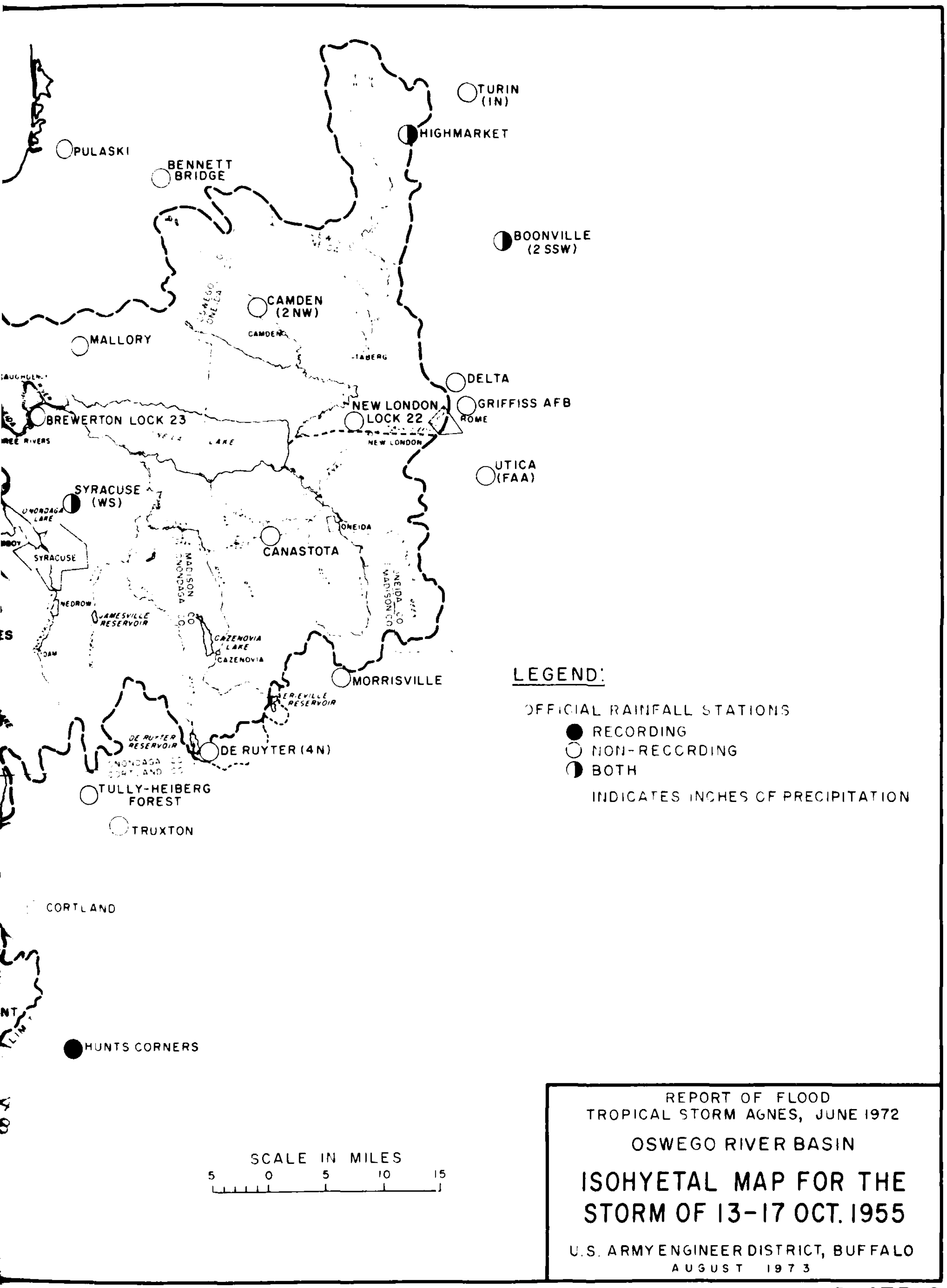
SKANEATELES LAKE
OTISCO LAKE
HEMLOCK
SENECA LAKE
CAYUGA LAKE
TULLY
AURORA RESEARCH FARM
MORAVIA
PENN YAN (2 SW)
PENN YAN
OVID (4 S)
LOCKE (2 W)
LOCKE
NAPLES
DANSVILLE
CORTLAND
GROTON
KEUKA LAKE
WEST BR KEUKA LAKE
TRUMANSBURG
FREEVILLE (2NE)
PRATTSBURG (2NW)
HECTOR
ITHACA
MT PLEASANT FARM
HASKINVILLE
HAMMONDSPORT
WATKINS GLEN (2 NW)
WATKINS GLEN
ITHACA CORNELL UNIV.
HUNTS
BRADFORD (1 NW)
BATH
MONTOUR FALLS
WATERSHED
ARNOT LODGE
SPENCER (3 W)



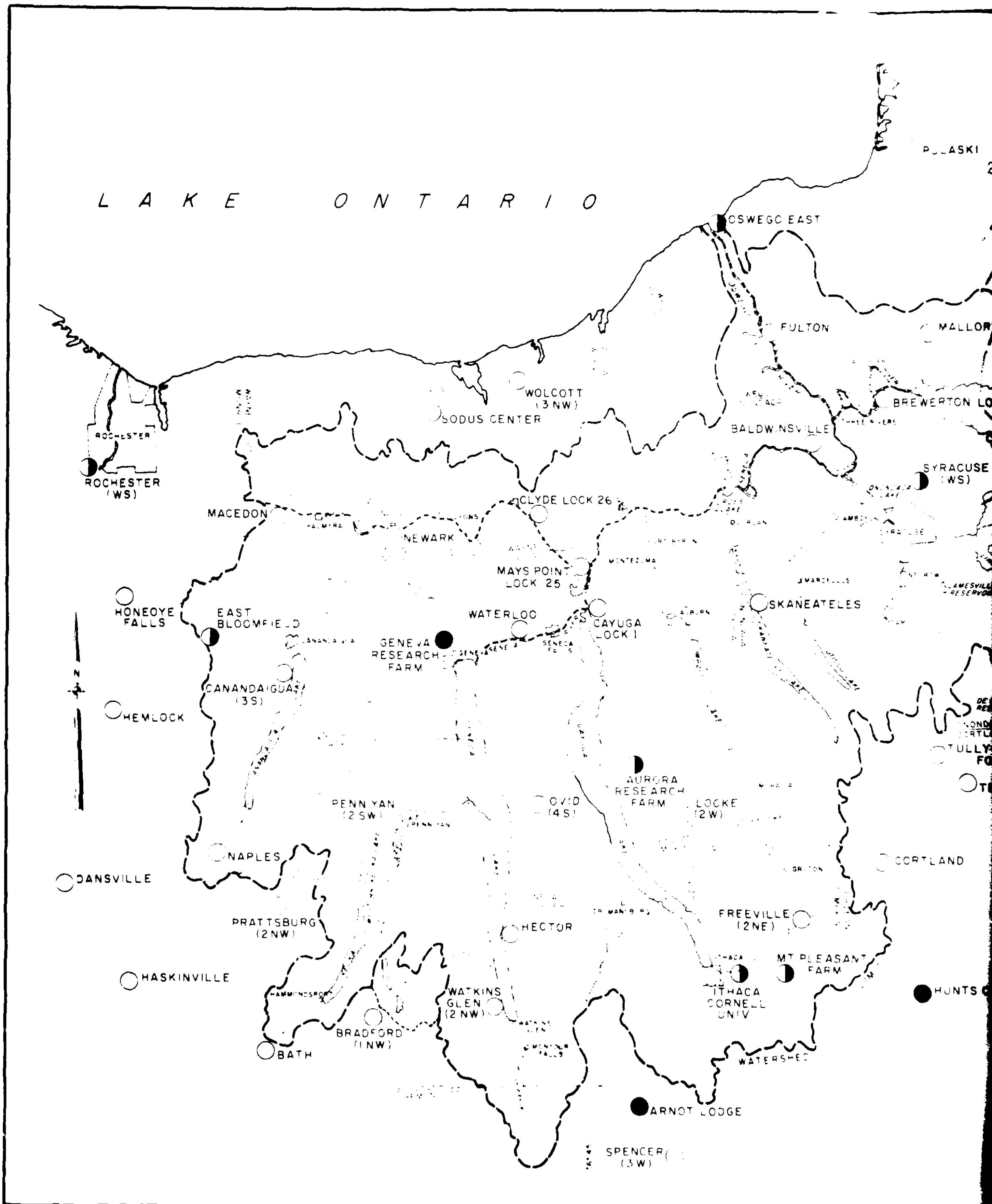
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

ISOHYETAL MAP FOR THE STORM OF 13-17 OCT. 1955

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 8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FULTON
MALLORY
WOLCOTT (3 NW)
SODUS CENTER
BREWERTON LOCK
BALDWINSVILLE
ROCHESTER
ROCHESTER (WS)
SYRACUSE (WS)
CLYDE LOCK 26
MACEDON
NEWARK
MAYS POINT LOCK 25
HONEOYE FALLS
EAST BLOOMFIELD
WATERLOO
CAYUGA LOCK 1
SKANEATELES
GENEVA RESEARCH FARM
CANANDAIGUA (3S)
HEMLOCK
AURORA RESEARCH FARM
PENN YAN (2 SW)
OVID (4S)
LOCKE (2W)
NAPLES
DANSVILLE
CORTLAND
PRATTSBURG (2NW)
HECTOR
FREEVILLE (2NE)
HASKINVILLE
MT PLEASANT FARM
ITHACA CORNELL UNIV
WATKINS GLEN (2 NW)
HUNTS
BRADFORD (1NW)
BATH
WATERSHED
ARNOT LODGE
SPENCER (3W)

LEGEND:

OFFICIAL RAINFALL STATIONS

- RECORDING
- NON-RECORDING
- BOTH

BUCKET SURVEY DATA OBTAINED BY BUFFALO DISTRICT PERSONNEL

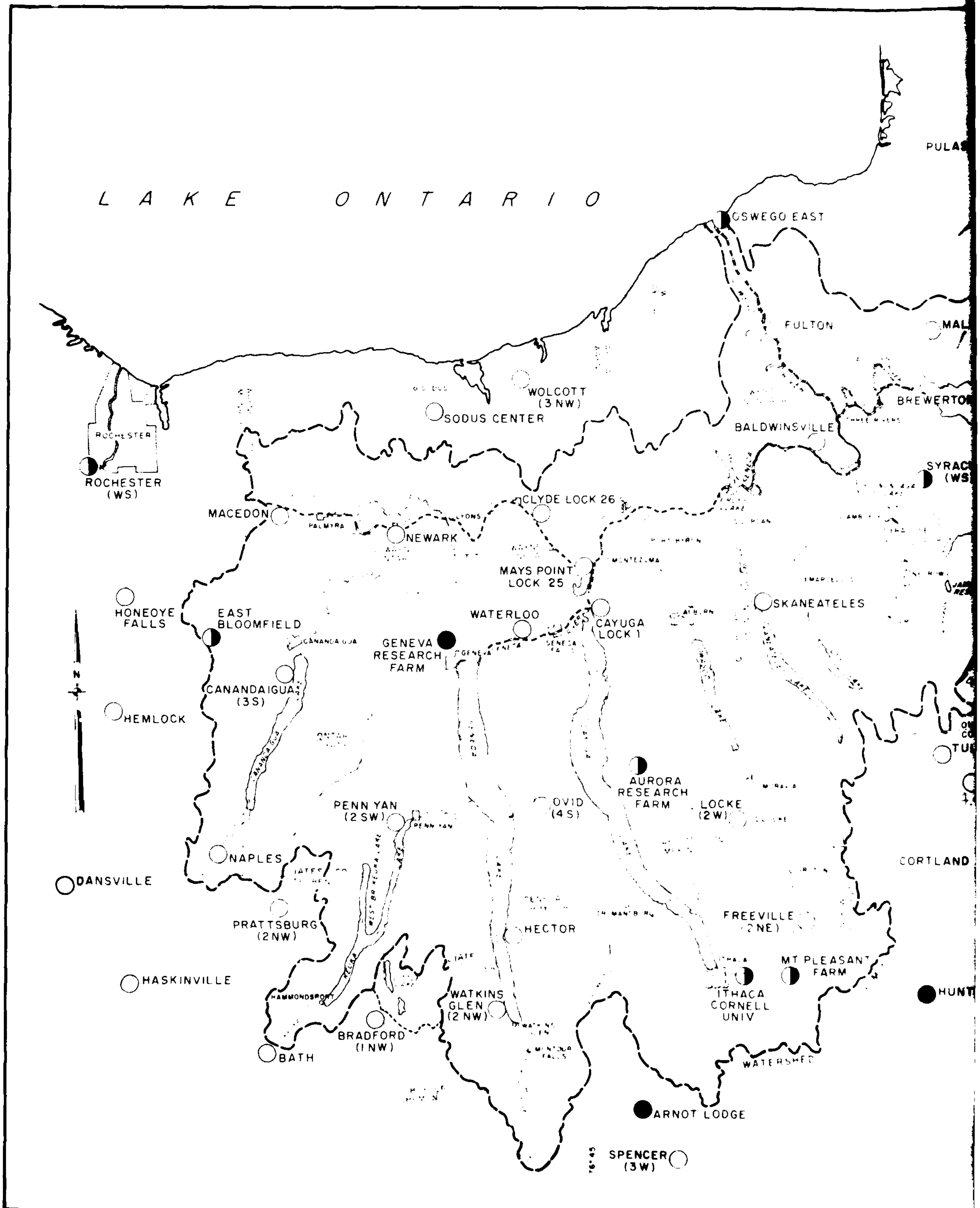
INDICATES INCHES OF PRECIPITATION AT OFFICIAL RAINFALL STATIONS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

ISOHYETAL MAP FOR 21-23 JUNE 1972

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



LAKE ONTARIO
OSWEGO EAST
PULAS
FULTON
MAL
BREWERTO
BALDWINSVILLE
WOLCOTT
(3 NW)
SODUS CENTER
ROCHESTER
ROCHESTER
(WS)
SYRAC
(WS
CLYDE LOCK 26
MACEDON
PALMYRA
NEWARK
LYONS
MAYS POINT
LOCK 25
MONTEZUMA
HONEOYE
FALLS
EAST
BLOOMFIELD
WATERLOO
CAYUGA
LOCK 1
SKANEATELES
GENEVA
RESEARCH
FARM
CANANDAIGUA
CANANDAIGUA
(3S)
HEMLOCK
AURORA
RESEARCH
FARM
PENN YAN
(2 SW)
OVID
(4 S)
LOCKE
(2 W)
NAPLES
DANSVILLE
CORTLAND
PRATTSBURG
(2 NW)
HECTOR
FREEVILLE
(2 NE)
HASKINVILLE
MT PLEASANT
FARM
ITHACA
CORNELL
UNIV
HUNT
HAMMONDSPORT
WATKINS
GLEN
(2 NW)
BRADFORD
(1 NW)
BATH
WATERSHED
ARNOT LODGE
SPENCER
(3 W)
N

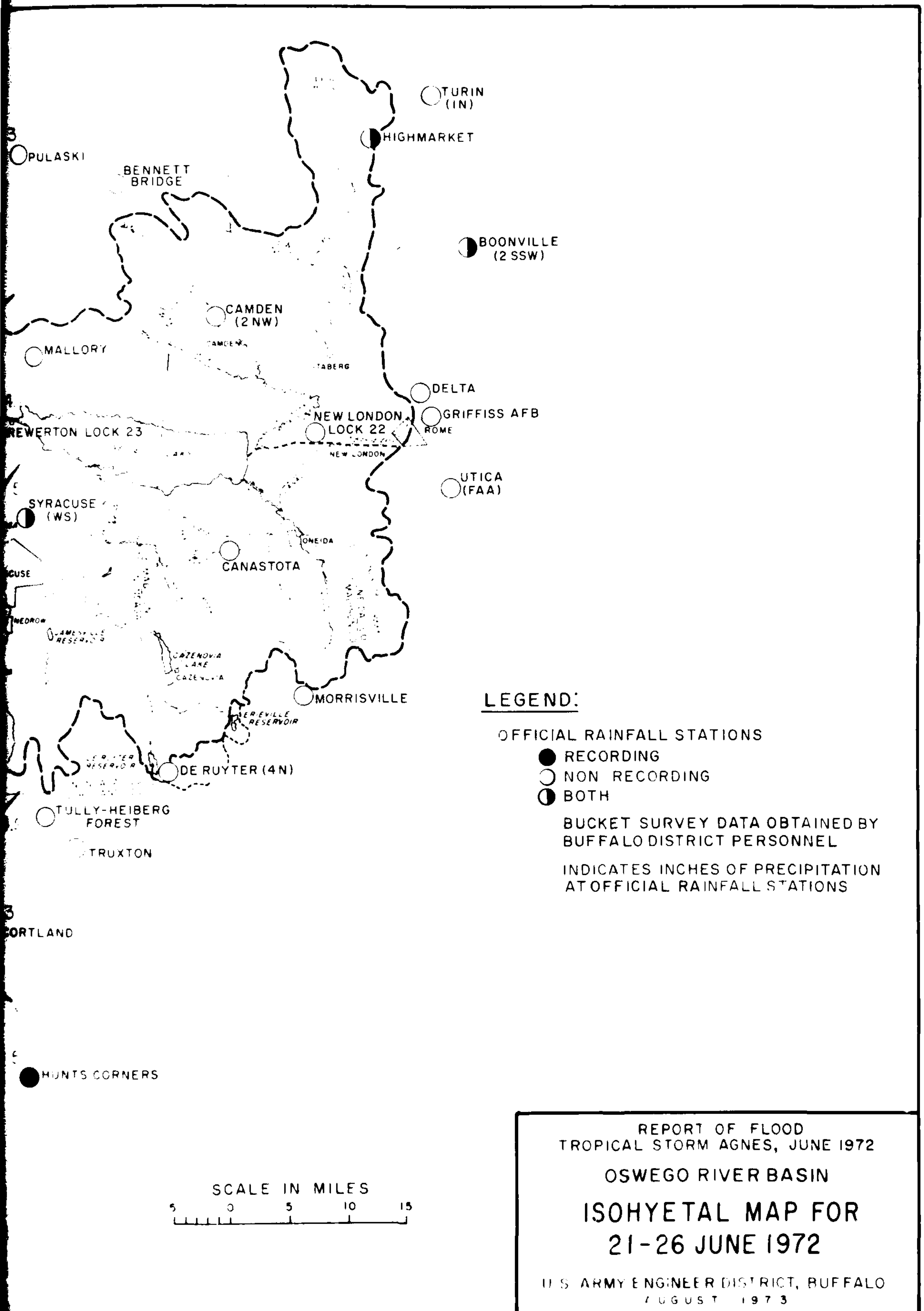
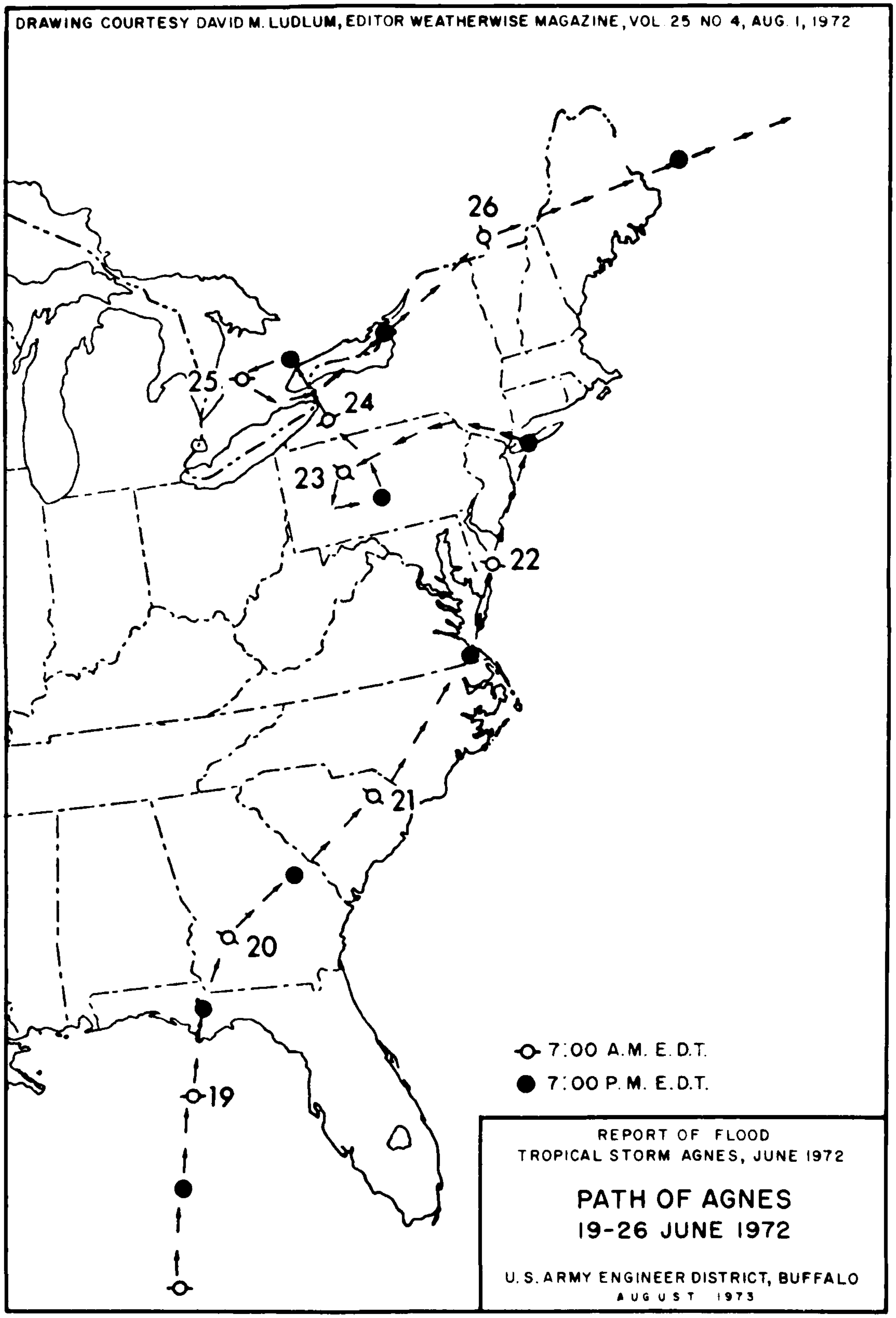

TURIN
(IN)
HIGHMARKET
PULASKI
BENNETT
BRIDGE
BOONVILLE
(2 SSW)
CAMDEN
(2 NW)
MALLORY
TABERG
DELTA
NEW LONDON
LOCK 22
GRIFFISS AFB
ROME
BREWERTON LOCK 23
NEW LONDON
UTICA
(FAA)
SYRACUSE
(WS)
ONEIDA
CANASTOTA
CAZENOVIA
LAKE
MORRISVILLE
ERIEVILLE
RESERVOIR
DE RUYTER (4N)
TULLY-HEIBERG
FOREST
TRUXTON
CORTLAND
HUNTS CORNERS
LEGEND:
OFFICIAL RAINFALL STATIONS
RECORDING
NON RECORDING
BOTH
BUCKET SURVEY DATA OBTAINED BY
BUFFALO DISTRICT PERSONNEL
INDICATES INCHES OF PRECIPITATION
AT OFFICIAL RAINFALL STATIONS
SCALE IN MILES
5 0 5 10 15
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
ISOHYETAL MAP FOR
21-26 JUNE 1972
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 10


DRAWING COURTESY DAVID M. LUDLUM, EDITOR WEATHERWISE MAGAZINE, VOL 25 NO 4, AUG. 1, 1972
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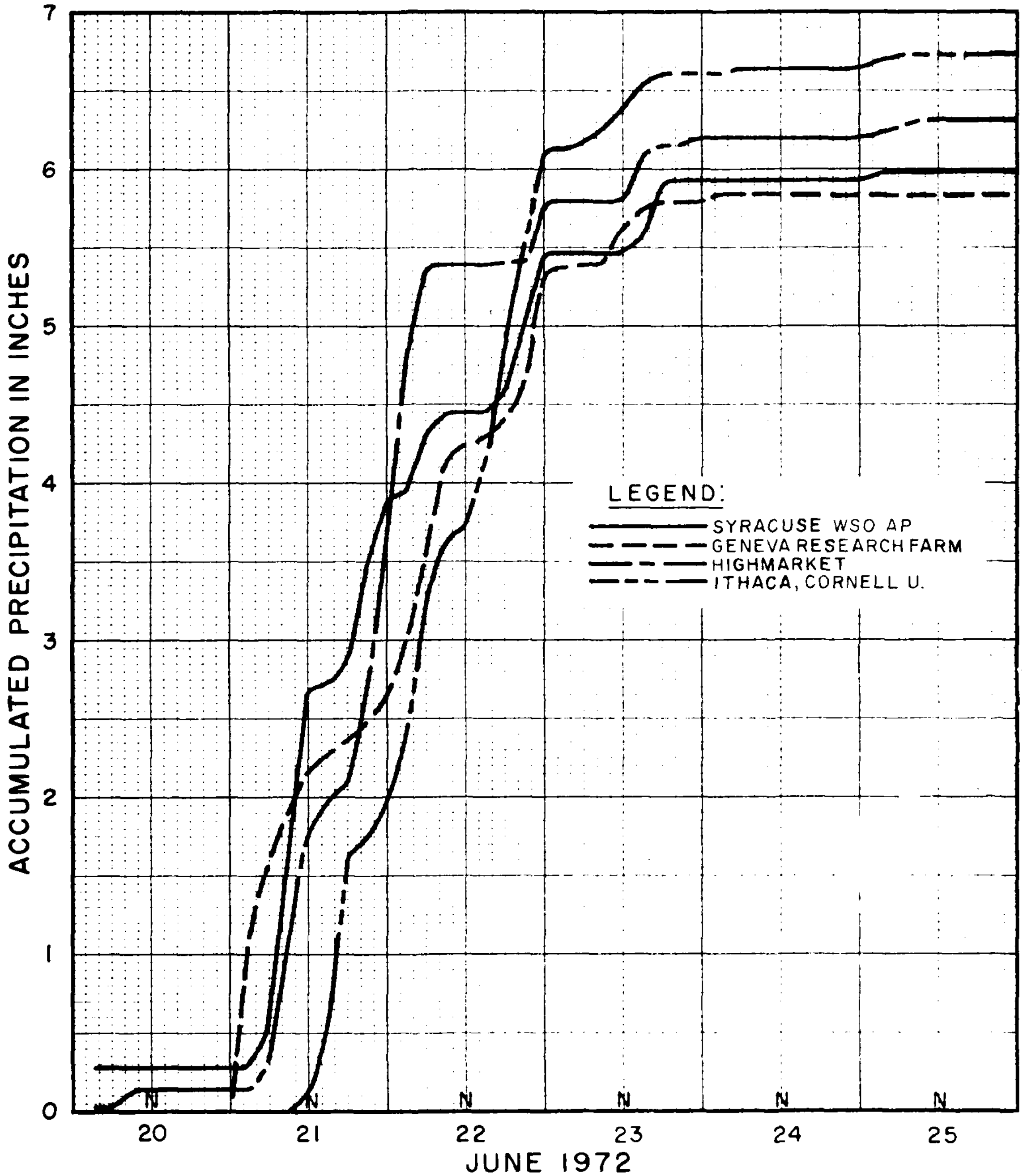
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
PATH OF AGNES
19-26 JUNE 1972
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE II



NOTE:

LOCATION OF STATIONS ARE SHOW ON PLATE 10.

N INDICATES NOON.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

MASS RAINFALL CURVES FOR PERIOD 20-25 JUNE 1972

U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

FLOOD FLOWS

Flood flow data during Tropical Storm "Agnes" were collected by the United States Geological Survey. Flows were obtained from continuous recording gages, staff gages, and by indirect measurements taken at various location throughout the Oswego River Basin. Plate 13 shows the U.S.G.S. gage locations in the Oswego River Basin. Tables 6 and 7 compare the June 1972 flood peaks to the maximum previously known flood on the Lakes and the Oswego River and selected tributaries respectively, in the basin. Also included in this table are period or record, drainage area in square miles, gage height, and respective dates of occurrence. The June 1972 flood set new maximum flows of record in many portions of the Oswego River Basin. Most of the Finger Lakes had record levels.

Table 6. - Summary of Peak Lake Stages (1)

Lake and Place of Determination	Drainage Area (sq. mi.)	Period of Record	Maximum Previously Known: Year	Maximum Previously Known: Gage Height (ft.)	Maximum During June 1972 Flood: Day	Maximum During June 1972 Flood: Gage Height (ft.)
Canandaigua Lake at Canandaigua	184	1928-72	1956	9.54	24	10.94
Cayuga Lake at Ithaca	1,564	1905-25 1956-72	1916	8.4	26	9.77
Keuka Lake at Hammondsport	182	1961-72	1961	5.79	24	9.35
Oneida Lake at Brewerton	1,382	1952-72	1960	10.69	26	11.84
Onondaga Lake at Liverpool	285	1970-72	1971	8.47	30	10.26
Otisco Lake at Otisco	43	1913-72	1913	788.43 (2)	-	788.97 (2)
Owasco Lake near Auburn	205	1968-72	1971	714.20 (2)	25	716.48 (2)
Seneca Lake at Watkins Glen	704	1957-72	1964	8.56	25	10.45
Skaneateles Lake at Skaneateles	72.7	1890-1972	1922	4.5	25	5.20

(1) From "A Summary of Peak Stages and Discharges in New York for the Flood of June 1972" by Kenneth I. Darmer for the U. S. Department of the Interior Geological Survey Water Resources Division.

(2) Elevations shown are U.S.C. & G.S. Datum.

Table 7. - Summary of Peak Stream Stages and Discharges (1)

Stream and Place of Determination	Drainage Area (Sq.Mi.)	Period of Record	Maximum Flood Previously Known			Maximum During June 1972 Flood		
			Date	Gage Height (feet)	Discharge (cfs)	Day	Gage Height (feet)	Discharge (cfs)
Catharine Cr. at Montour Falls	38.2							3,150
Hector Falls Cr. at Burdett	11.8	1935 1971-72	1935		4,600			1,500
Keuka Lake Outlet at Dresden	207	1965-72	1971	5.17	2,320	22	8.38	2,680
Canandaigua Lake Outlet at Chapin	195	1940-72	1942	4.64	1,100	24	5.62	1,970
Flint Creek at Potter	31	1964-68 1971-72	1964	6.87	920	23	10.15	1,300
Flint Creek at Phelphs	102	1960-72	1960 1963	5.83 6.20	2,940	24	5.75	2,810
Black Brook at Tyre	19	1966-72	1966	2.70	258		3.61	430
Owasco Inlet at Moravia	106	1960-68	1961 1964	12.21 12.76	11,600	23	16.17	-
Owasco Outlet near Auburn	206	1914-72	1936	4.88	2,090	23	6.28	3,140
Seneca River at Baldwinsville	3,136	1950-71	1960	9.21	17,200	28 30	9.21	17,200

(1) From "A Summary of Peak Stages and Discharges in New York for the Flood of June 1972" by Kenneth I. Darmer for the U. S. Department of the Interior Geological Survey Water Resources Division.

Table 7. - Summary of Peak Stream Stages and Discharges (Cont'd)(1)

Stream and Place of Determination	Drainage Area (Sq.Mi.)	Period of Record	Maximum Flood Previously Known: Date	Maximum Flood Previously Known: Gage Height (feet)	Maximum Flood Previously Known: Discharge (cfs)	Maximum During June 1972 Flood: Day	Maximum During June 1972 Flood: Gage Height (feet)	Maximum During June 1972 Flood: Discharge (cfs)
Onondaga Cr. at Dorwin	88.5	1952-72	1960 1961	5.06 5.11	7,130 -	24	4.80	3,670
Onondaga Cr. at Spencer St., Syracuse	109	1971-72	1971	6.74	1,640	23	8.09	3,400
Harbor Brook at Syracuse	9.63	1960-72	1969	7.13	374	23	7.45	458
Harbor Brook at Hiawatha Blvd., Syr.	11.3	1971-72	1971	6.17	410	21	6.55	474
Nine Mile Cr. near Marietta	45.5	1965-72	1971	5.36	343	22	8.65	1,030
Nine Mile Cr. at Camillus	84.3	1959-72	1960	8.25	2,760	23	8.73	1,930
Nine Mile Cr. at Lakeland	115	1971-72	1971	7.12	1,600	23	8.58	2,290
Keshong Cr. near Bellona	30.7	1966-72	1967	3.94	-	-	3.19	2,600
Kendig Cr. near MacDougall	13.8	1965-72	1971	6.23	-	-	4.93	400
Cayuga Inlet near Ithaca	36.7	1937-72	1942	7.58	4,110	23	8.10	4,900
Butternut Cr. near Ithaca	11.3	1962-69					9.94	1,060

(1) From "A Summary of Peak Stages and Discharges in New York for the Flood of June 1972" by Kenneth I. Darmer for the U. S. Department of the Interior Geological Survey Water Resources Division.

Table 7. - Summary of Peak Stages and Discharges (Cont'd) (1)

Stream and Place of Determination	Drainage Area (Sq.Mi.)	Period of Record	Maximum Flood Previously Known			Maximum During June 1972 Flood		
			Date	Gage Height (feet)	Discharge (cfs)	Day	Gage Height (feet)	Discharge (cfs)
Cayuga Inlet at Ithaca	86.5	1971-72	1971	10.74	5,200		14.6	11,800
Coy Glen Cr. at Ithaca	3.55							516
Sixmile Cr. near Ithaca	42.0	1966-69: 1971-72	1966	3.82			9.37	5,360
Sixmile Cr. at Potters Falls at Ithaca	45.5	1935	1935		4,330			4,430
Virgil Cr. at Dryden	20.6	1966-72	1967	2.58	656		3.90	1,400
Falls Cr. at Ithaca	126	1908-09: 1925-72	1935	9.52	15,500	23	5.38	5,860
Salmon Cr. at Ludlow- ville	81.7	1964-68: 1971-72	1966	7.23	1,940		10.62	4,160
Mud Cr. at East Victor	64.7	1958-68	1963	6.65	1,370		7.90	1,600
Ganargua Cr. at Macedon	104	1965-69	1966	5.91	1,520		6.80	1,950
West River near Middle- sex	29.3	1965-72	1967	3.16	242		6.82	2,790

(1) From "A Summary of Peak Stages and Discharges in New York for the Flood of June 1972" by Kenneth I. Darmer for the U. S. Department of the Interior Geological Survey Water Resources Division.

Table 7. - Summary of Peak Stream Stages and Discharges (Cont'd) (1)

Stream and Place of Determination	Drainage Area (Sq.Mi.)	Period of Record	Maximum Flood Previously Known: Date	Maximum Flood Previously Known: Gage Height (feet)	Maximum Flood Previously Known: Discharge (cfs)	Maximum During June 1972 Flood: Day	Maximum During June 1972 Flood: Gage Height (feet)	Maximum During June 1972 Flood: Discharge (cfs)
East Branch Fish Cr. at Taberg	188	1924-72	1945	10.90	13,600	22	11.71	14,500
Oneida Cr. at Oneida	113	1950-72	1950 1959	13.78 14.30	7,440	22	14.61	9,260
Limestone Cr. at Fayetteville	85.5	1940-72	1950	7.78	7,010	23	7.56	3,800
Butternut Cr. near Jamesville	32.2	1959-72	1962 1964	7.54 6.29	1,260	21	7.15	1,120
Meadow Br. at Hurlburt Rd. Syracuse	12.9	1971	1971	3.10	126	21	3.35	156
Scriba Cr. near Constantia	38.4	1966-72	1971	6.45	870	22	7.42	1,200
Oneida River at Caughdenoy	1,382	1903-12 1948-72	1903		13,800	25		10,100
Oswego River at Lock 7, Oswego	5,098	1901-06 1934-72	1936 1940	13.46	37,500	29	11.87	32,500

(1) From "A Summary of Peak Stages and Discharges in New York for the Flood of June 1972" by Kenneth I. Darmer for the U. S. Department of the Interior Geological Survey Water Resources Division.

FLOOD FREQUENCY STUDY

General

Stage-frequency relationship was analyzed in connection with the damages from torpical storm "Agnes" on selected lakes and all reaches of the Barge Canal, and major rivers in the Oswego River Basin. Stage-frequency curves were developed for these lakes, as well as agricultural and non-agricultural reaches of the Barge Canal and the major rivers.

Stage-Frequency

The annual maximum stage records on the Barge Canal were obtained from the New York State Department of Transportation, Syracuse District, and from local operating agencies on the lakes. Frequency curves were drawn using Beard's plotting position method (Exhibit 37, Statistical Methods in Hydrology, by Leo Beard, Hydrologic Engineering Center, Corps of Engineers). They are shown in the appropriate sections of this report.

Frequency curves on the lakes were derived by the Buffalo District. The datums used vary from lake to lake and are listed on each curve. The five highest stages and respective frequencies are shown for each lake. These tables are shown in the appropriate section for each lake.

SUMMARY

Tropical storm "Agnes" is notable in that it produced the "Flood of record" over a large area of the Oswego River Basin. Of significance are the facts that:

1. Record rainfalls were experienced over large portions of the basin.
2. The duration of significant rainfall was approximately 2-1/2 days.
3. Rainfall intensity was uniform and moderate.

OSWEGO RIVER BASIN LAKES

The lakes discussed in this section of the report are: Canandaigua, Cayuga, Keuka, Oneida, Onondaga, Otisco, Owasco, Seneca, and Skaneateles. These lakes provide the setting for some of the most beautiful vacationland in the State of New York. The flooding associated with Tropical Storm Agnes affected each of the above mentioned lakes. Record high levels were experienced on some of them and significant flood damage was incurred by all of them. Table 8 lists the estimated damages for the June 1972 flood and average annual damages for the lakes.

Figures 3 through 15 show flood conditions on the lakes during the storm occurrence.

Stage-frequency and stage-damage curves are shown for each respective lake.

The lakes in the Oswego River Basin are primarily used for recreation and water supply and all have some type of control, either directly or indirectly on their levels and outflows. Table 9 lists the controls on the Oswego River Basin Lakes.

Table 8. - Estimated Damage Data on the Lakes in the Oswego River Basin

Lake	Average Annual Damage	Estimated June 1972 Flood Damage: Residential	Commercial	Public and Other	Total
	$	$	$	$	$
Canandaigua	64,000	308,000	1,152,000	49,000	1,509,000
Cayuga	185,000	614,000	825,000	268,000	1,707,000
Keuka	135,000	722,000	392,000	109,000	1,223,000
Oneida	523,000	664,000	777,000	59,000	1,500,000
Onondaga	45,000	-	-	375,000	375,000
Otisco	8,000	29,000	minor	52,000	81,000
Owasco	77,000	167,000	6,000	42,000	215,000
Seneca	90,000	417,000	657,000	364,000	1,438,000
Skaneateles	6,000	77,000	68,000	23,000	168,000
TOTAL	1,133,000	2,998,000	3,877,000	1,341,000	8,216,000

Table 9. - Controls for the Oswego River Basin Lakes

Lake	Description of Control
Canandaigua	Muir Dam and Feeder Canal at Canandaigua
Cayuga	Control structure at Mud Lock (Lock 1)
Keuka	Control structure at Penn Yan
Oneida	Dam at Caughdenoy
Onondaga	Water surface elevation on Barge Canal (1)
Otisco	Control structure on Nine Mile Creek
Owasco	State Dam at Auburn
Seneca	Control structure at the Waterloo Lock
Skaneateles	Control structure on Skaneateles Creek

(1) Water surface elevation is controlled by a structure at Phoenix Lock.

Canandaigua Lake

The shoreline of Canandaigua Lake is almost completely utilized with cottages, recreation areas and permanent homes. Areas that are not developed are in the southern portion of the lake which is a Game Management Area, and areas along the shoreline that lie beneath steep banks. The majority and development is on the northeast portion of the lake perimeter. In recent years there has been a gradual trend of converting summer cottages into permanent homes adding to the flood damage potential.

There is a U. S. Geological Survey water stage recorder on Canandaigua Lake. Table 10 lists the five highest recorded stages and their approximate frequency. The June 1972 flood has an approximate frequency of occurrence of 90 years. It was approximately 1.4 feet higher than the previous flood stage of record, that which occurred in 1956.

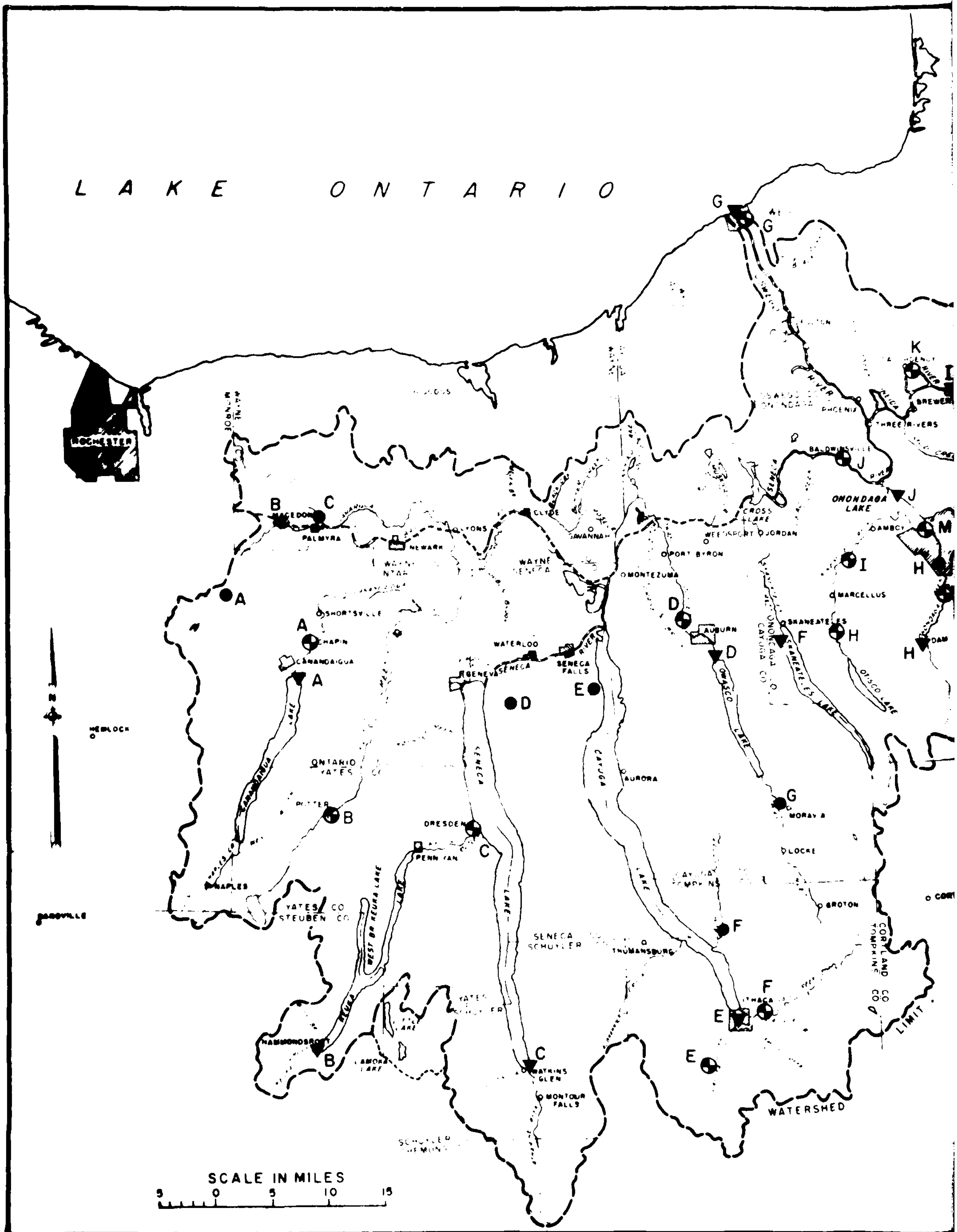
Figure 3 shows flooding conditions at the north end of the lake. The stage hydrograph shown in Plate 14 shows the peak stage that occurred during the June 1972 flood occurrence. Stage-frequency and stage-damage curves are shown on Plates 15 and 16, respectively.

Table 10. - Five Highest Stages on Canandaigua Lake for the Period 1911-1922, 1927, 1929-1972

Order of Magnitude	Elevation*	Year	Approximate frequency (yrs.)
1	691.7	1972	90
2	690.3	1956	30
3	690.2	1936	20
4	689.8	1940	15
5	689.6	1929	10

* Gage located at Canandaigua. Elevations are on mean sea level (MSL) datum, Corps of Engineer levels.

Figure 3 Aerial view, looking west, of flooding at north end of Canandaigua Lake. Photo taken 24 June 1972.


LAKE ONTARIO
ROCHESTER
MACEDON
PALMYRA
NEWARK
LYONS
CLYDE
SAVANNAH
WAYNE
SENECA
ONTARIO
YATES
SHORTSVILLE
CHAPIN
CANANDAIGUA
CANANDAIGUA LAKE
HEMLOCK
NAPLES
YATES CO
STEUBEN CO
POTTER
DRESDEN
PENN YAN
KEUKA LAKE
WEST BR KEUKA LAKE
HAMMONDSPORT
LAMOKA LAKE
GENEVA
SENECA
WATERLOO
SENECA FALLS
SENECA LAKE
WATKINS GLEN
MONTOUR FALLS
CAYUGA LAKE
AURORA
SENECA
SCHUYLER
TRUMANSBURG
ITHACA
MONTEZUMA
PORT BYRON
WEEDSPORT
JORDAN
CROSS LAKE
AUBURN
OWASCO LAKE
MORAVIA
LOCKE
GROTON
SKANEATELES
SKANEATELES LAKE
CAYUGA CO
ONONDAGA CO
MARCELLUS
OTISCO LAKE
BALDWINSVILLE
ONONDAGA LAKE
CAMILLUS
THREE RIVERS
PHOENIX
BREWERTON
FULTON
OSWEGO
CORTLAND CO
TOMPKINS CO
WATERSHED
LIMIT
SCALE IN MILES
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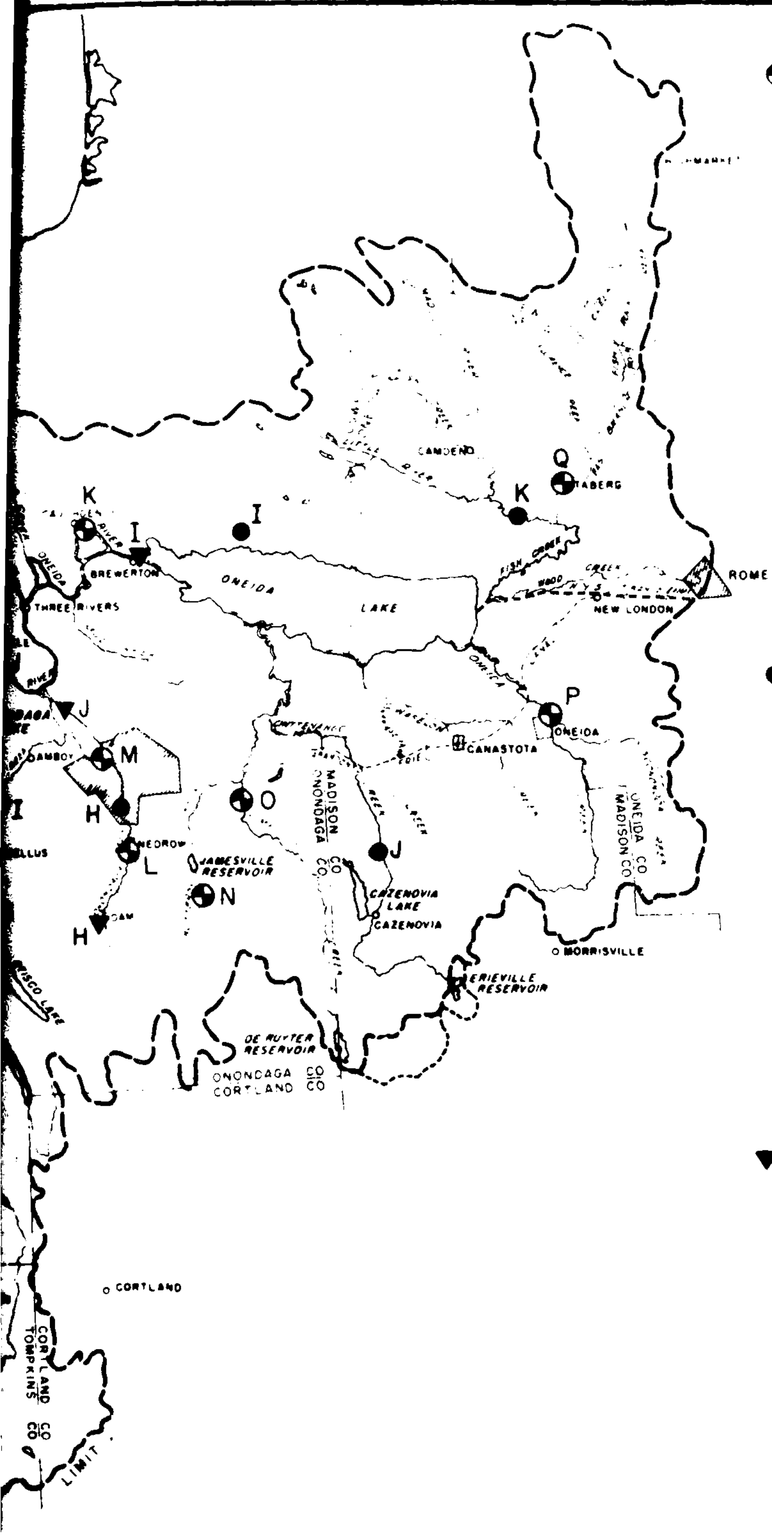


ACTIVE RECORDING GAGES

A. CANANDAIGUA OUTLET AT CHAPIN
B. FLINT CREEK AT POTTER
C. KEUKA LAKE OUTLET AT DRESDEN
D. OWASCO OUTLET NEAR AUBURN
E. CAYUGA INLET NEAR ITHACA
F. FALL CREEK NEAR ITHACA
G. OSWEGO RIVER AT LOCK 7
H. NINEMILE CREEK NEAR MARIETTA
I. NINEMILE CREEK AT CAMILLUS
J. SENECA RIVER AT BALDWINSVILLE
K. ONEIDA RIVER AT CAUGHDENOY
L. ONONDAGA CREEK AT DORWIN AVE.
M. ONONDAGA CREEK AT SPENCER ST., HARBOR BROOK AND BARGE CANAL GAGE 213
N. BUTTERNUT CREEK NEAR JAMESVILLE
O. LIMESTONE CREEK AT FAYETTEVILLE
P. ONEIDA CREEK AT ONEIDA
Q. EAST BRANCH FISH CREEK AT TABERG

DISCONTINUED RECORDING GAGES

A. MUD CREEK AT EAST VICTOR (1968)
B. ERIE CANAL AT MACEDON, LOCK E-30 (1968)
C. RED CREEK NEAR PALMYRA (1968)
D. KENDIG CREEK NEAR MACDOUGALL (1968)
E. CANOGA CREEK AT CANOGA (1968)
F. SALMON CREEK AT LUDLOWVILLE (1968)
G. OWASCO INLET AT MORAVIA (1968)
H. ONONDAGA CREEK AT SYRACUSE (1949)
I. SCRIBA CREEK NEAR CONSTANIA (1968)
J. CHITTENANGO CR. NEAR CHITTENANGO (1968)
K. WEST BR. FISH CR. AT BLOSSVALE (1968)

LAKE STAGE GAGES

A. CANANDAIGUA LAKE AT CANANDAIGUA
B. KEUKA LAKE AT HAMMONDSPORT
C. SENECA LAKE AT WATKINS GLEN
D. OWASCO LAKE NEAR AUBURN
E. CAYUGA LAKE AT ITHACA
F. SKANEATELES LAKE AT SKANEATELES
G. LAKE ONTARIO AT OSWEGO
H. ONONDAGA RESERVOIR
I. ONEIDA LAKE AT BREWERTON
J. ONONDAGA LAKE AT LIVERPOOL

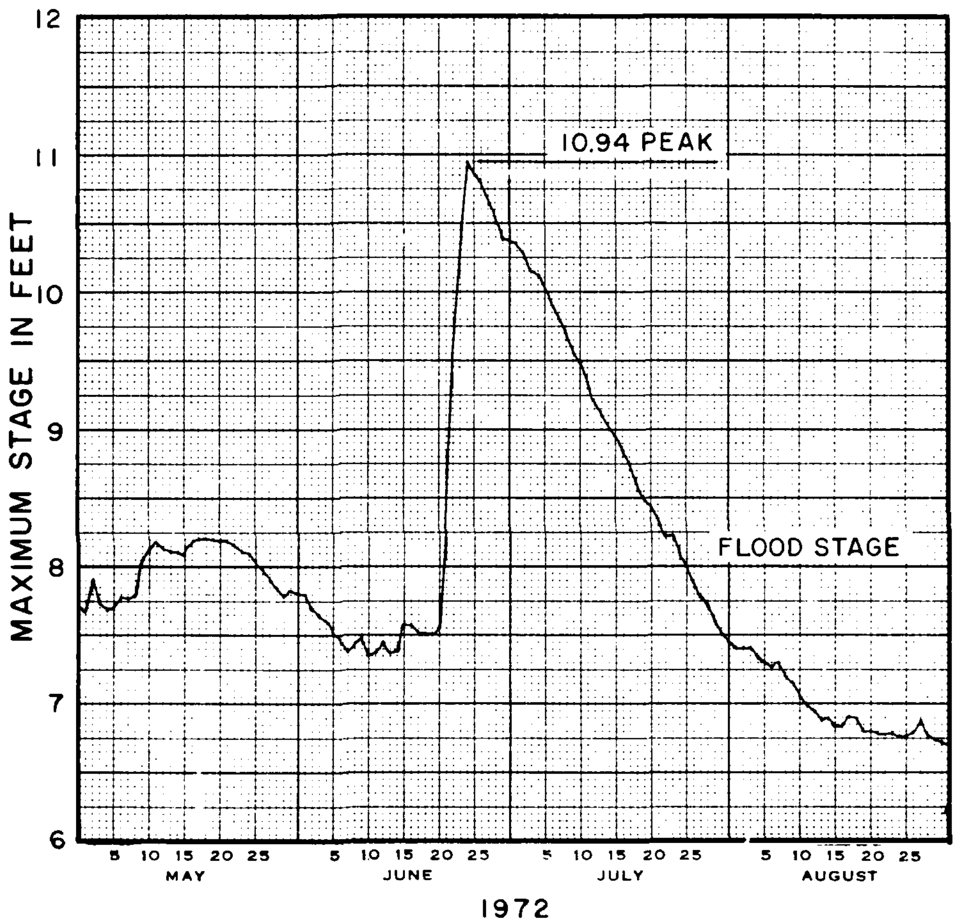
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

GAGE LOCATIONS

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 13



NOTES:

DATUM OF GAGE IS 681.17 FT. ABOVE MEAN SEA LEVEL. (U.S.G.S. LEVELS)

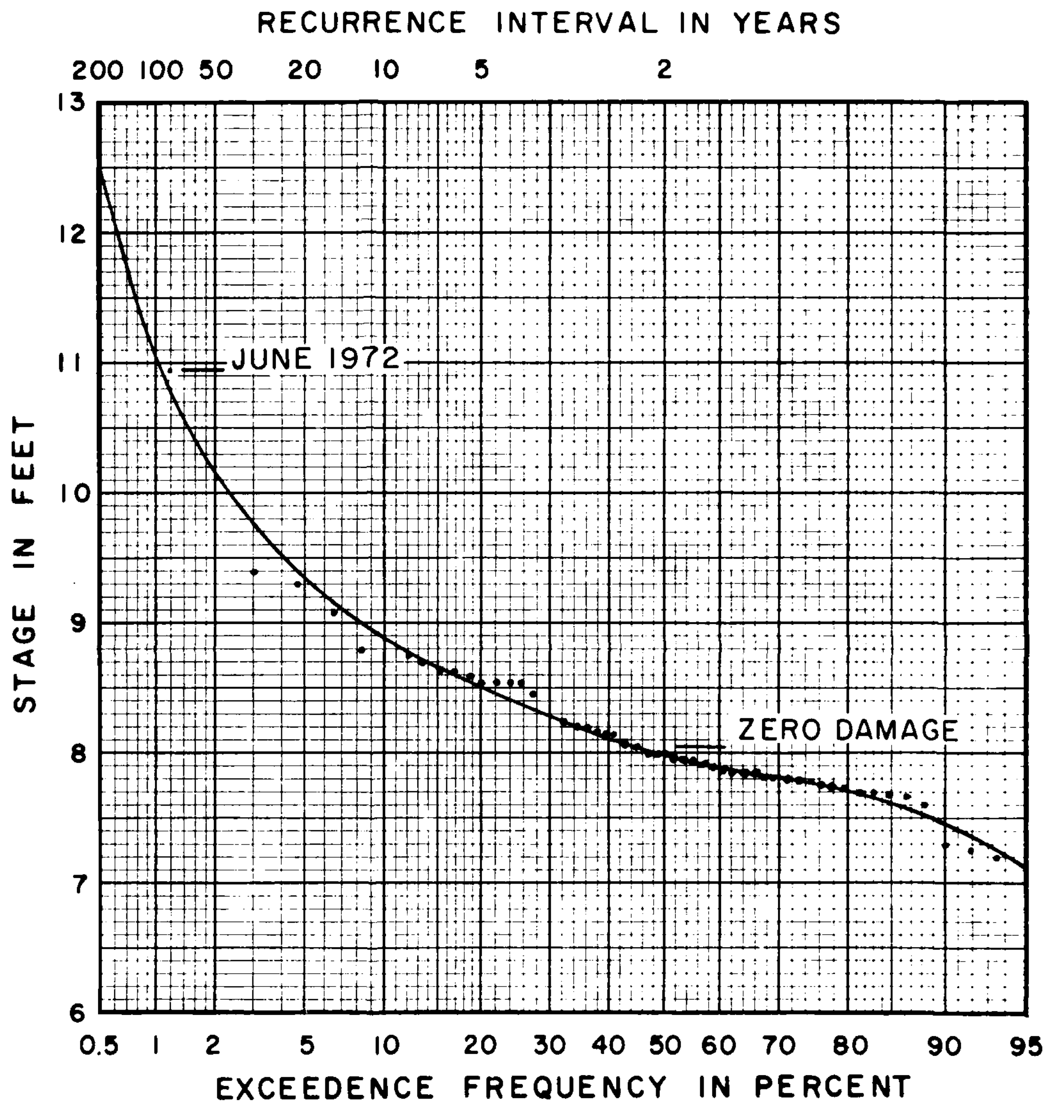
DATUM OF GAGE IS 680.76 FT. ABOVE MEAN SEA LEVEL. (CORPS OF ENGRS. LEVELS)

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE HYDROGRAPH

CANANDAIGUA LAKE
AT CANANDAIGUA N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

DATUM OF GAGE IS 681.17 ABOVE MEAN SEA LEVEL (USGS LEVELS).

DATUM OF GAGE IS 680.76 ABOVE MEAN SEA LEVEL (CORPS OF ENGRS. LEVELS).

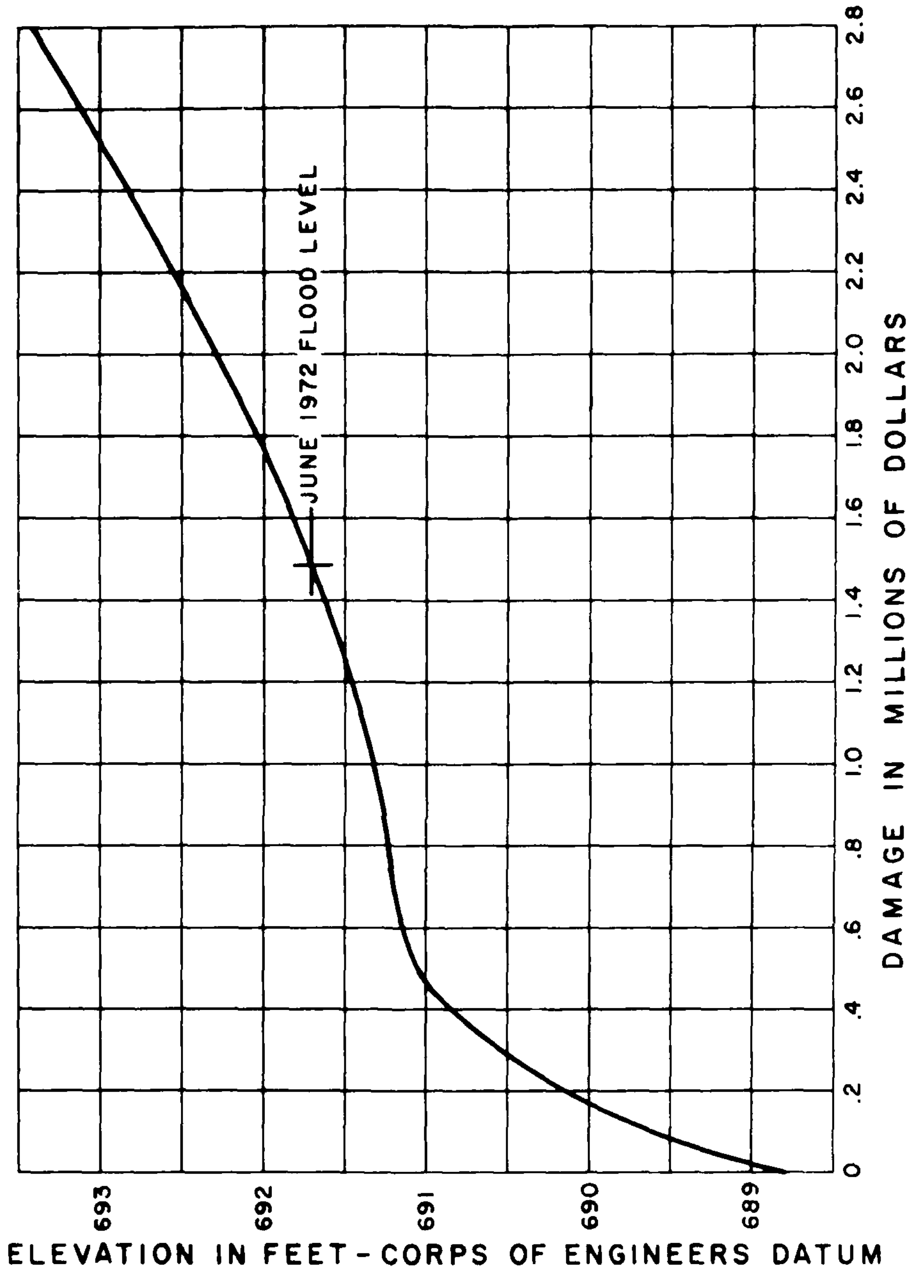
P.O.R. 1911-1922, 1927, 1929-1972 (57 YEARS)

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
CANANDAIGUA LAKE
AT CANANDAIGUA, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

CANANDAIGUA LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

Cayuga Lake

Cayuga Lake is the second largest of the Finger Lakes. It is quite deep except at both the north and south ends where relatively shallow water occurs. The shoreline is intensively developed with cottages except where development is physically impractical or impossible. Recreation is a major influence in the economy of the area where the natural beauty of the glens and forests attracts thousands of visitors each year.

Ithaca is located on the south end of the lake and is the major city on it. Ithaca manufactures machine parts, adding machines and guns. It is also the home of Ithaca College and Cornell University.

Lake levels are regulated by the control structure at Mud Lock. Regulation of Lake levels by this structure is to maintain required navigation levels and alleviate flooding on Seneca and Oswego Rivers. This lake regulation also serves to maintain elevations on Cayuga Lake that are compatible with existing development and with recreation and water sypply requirements.

The New York State Department of Public Works, Division of Canals and Waterways regulates Cayuga Lake from a low elevation of 380.0 to a high of 384.0 when climatological conditions permit. Spring high water is maintained as close to 384.0 as possible, but nearly every year the lake will rise to elevation 385.0 or higher.

Low water during the early summer is maintained at elevation 384.0 which is gradually drawn down toward the end of summer to 382.5. In dry years the lake is lowered from 382.5 to 382.0 between September 1 and October 25 and 380.0 by December 1. After the close of the navigation season the lake is drawn to 380.0 to provide room for the storage of spring runoff.

"Agnes" proved to be too much for the normal methods of alleviating

floods and the lake level rose over three feet from 20 June to 24 June to a point approximately one foot above the previously recorded record high lake level of 1936 and 1916.

There is a U.S.G.S. water stage recorder on Cayuga Lake at Ithaca. Table 11 lists the five highest recorded stages on Cayuga Lake and their approximate frequency. The June 1972 flood has an approximate frequency of 125 years. The stage hydrograph on Plate 17 shows the peak stage that occurred during the June 1972 flood occurrence. Stage-frequency and stage-damage curves are shown on Plates 18 and 19, respectively. Figures 4 through 17 show flood conditions on Cayuga Lake.

Table 11. - Five Highest Stages on Cayuga Lake for the Period 1905-1972

Order of Magnitude	Elevation	Year	Approximate Frequency (yrs.)
1	387.8*	1972	125
2	386.6	1936	20
3	386.6	1916	20
4	386.4	1914	15
5	386.4	1927	15

*U.S.G.S. continuous recording gage located at Ithaca, NY, 1958-present. All other levels were recorded at Cayuga, NY, and represent a daily reading. Elevations are on Barge Canal datum.

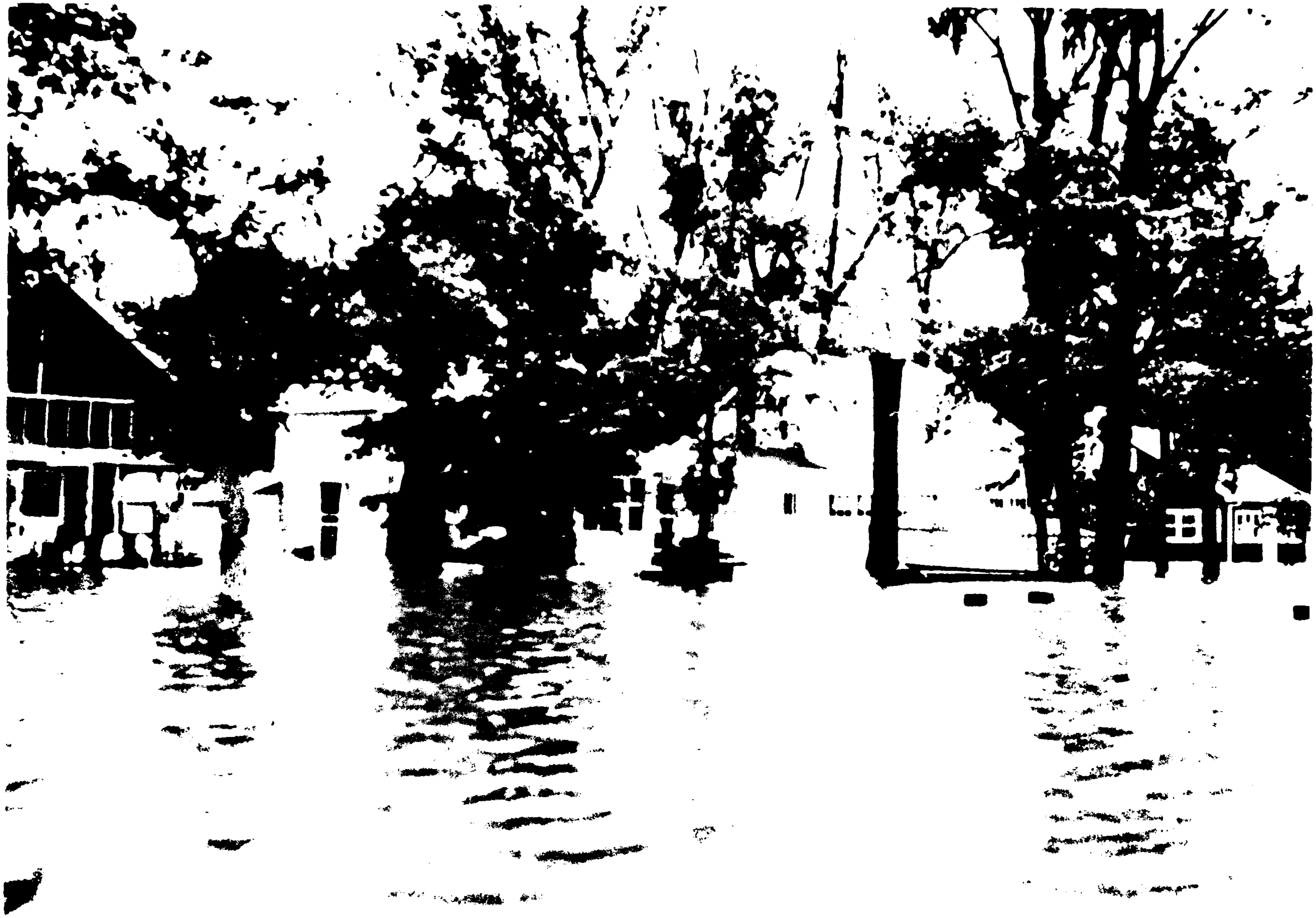
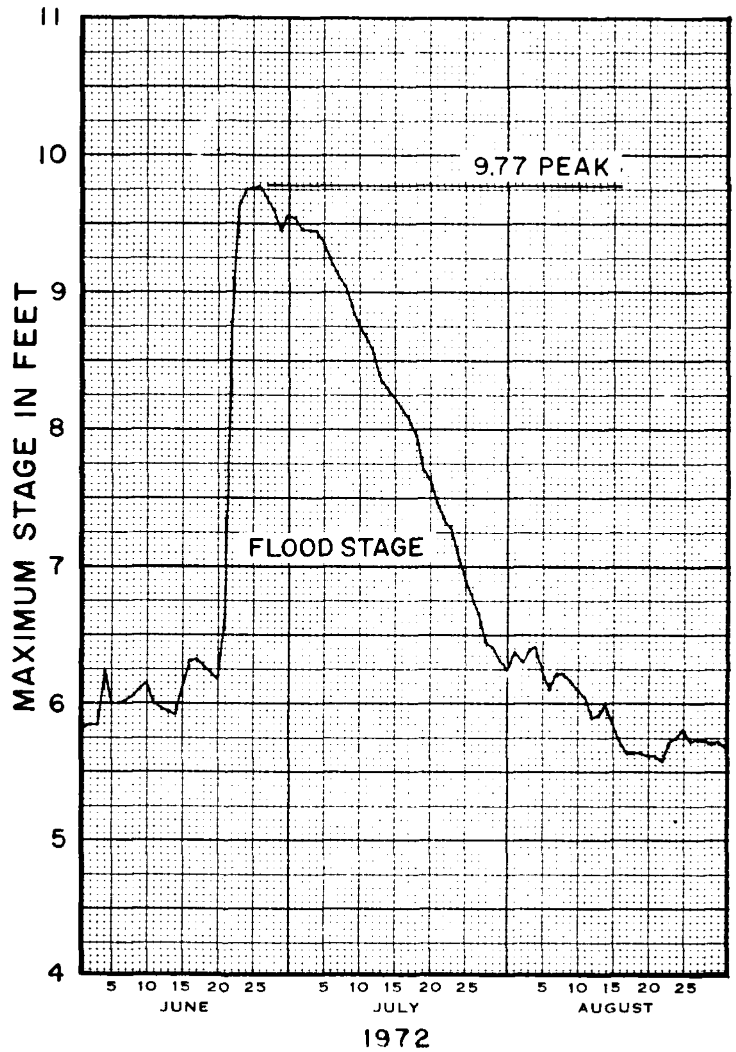


Figure 4 Inundated homes at Myers Point on southeasterly shore of Cayuga Lake. Photo taken 24 June 1972.

Figure 5 Bank erosion at Stewart Park in Ithaca on Cayuga Lake. Photo taken 23 June 1972.

Figure 6 Flooded homes along Cayuga Lake shore as of 29 June 1973.

Figure 7 Aerial view of flooding at Taughannock State Park. Photo taken 26 June 1972.



NOTES:

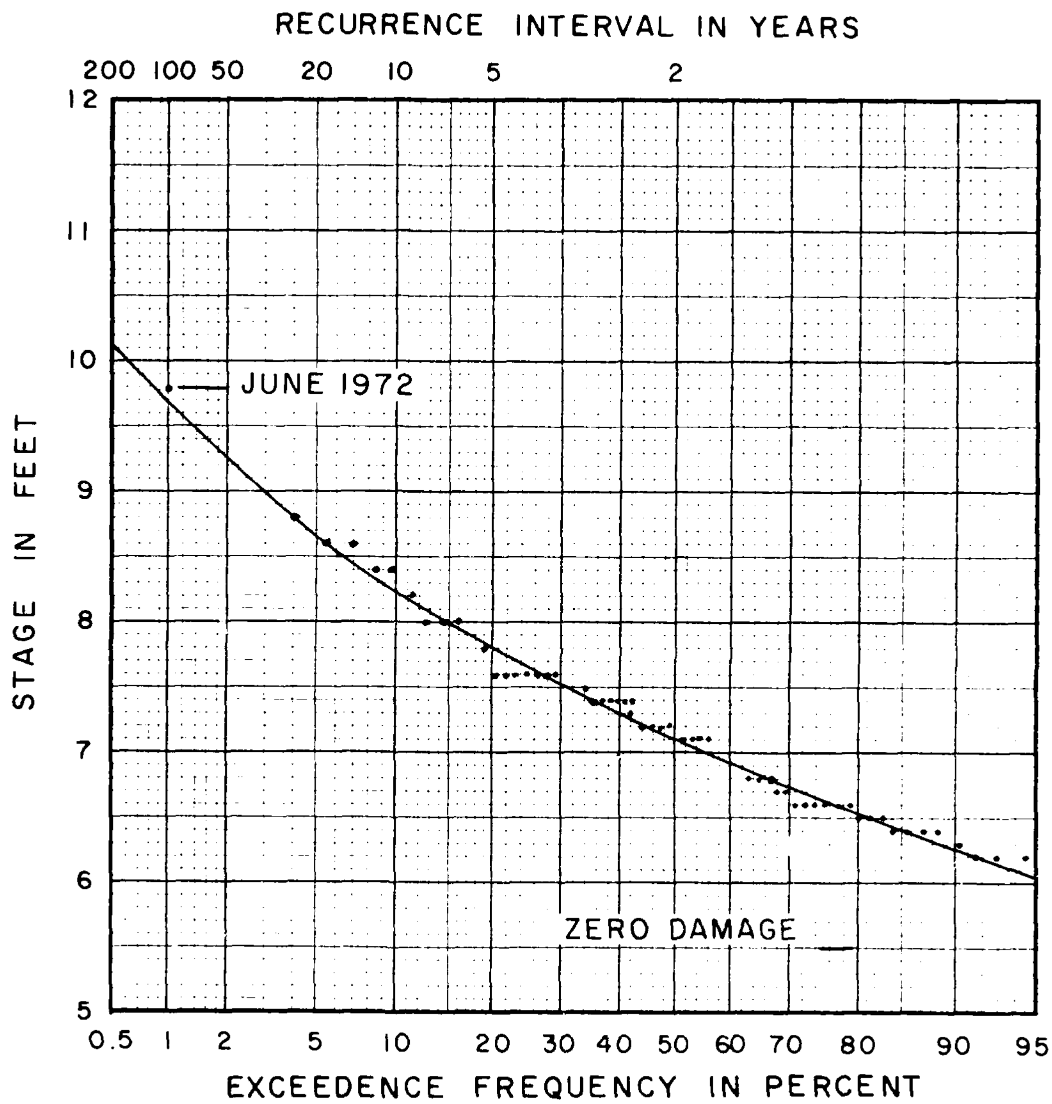
DATUM OF GAGE IS 376.57 FT. ABOVE MEAN SEA LEVEL OR 378.00 FT. BARGE CANAL DATUM. PRIOR TO OCT. 1968 DATUM IS 2.0 FT. HIGHER.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE HYDROGRAPH

CAYUGA LAKE AT ITHACA, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

DATUM OF GAGE IS 376.57 FT ABOVE MEAN SEA LEVEL OR 378.00 FT BARGE CANAL DATUM PRIOR TO OCT. 1968 DATUM WAS 2.0 FT. HIGHER.

P.O.R. 1905-1972 (68 YEARS)

DOTS INDICATE PLOTTING POINTS.

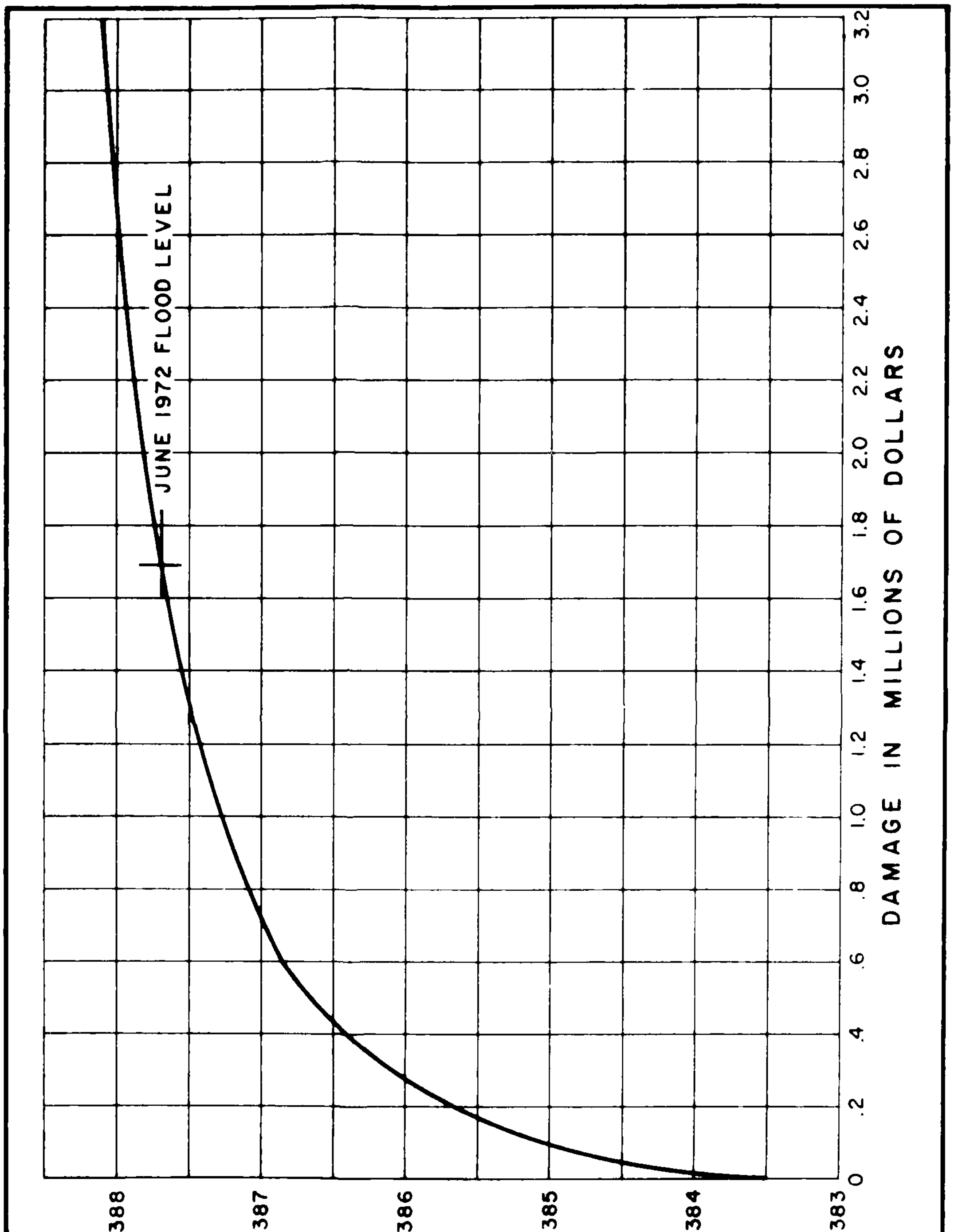
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

CAYUGA LAKE AT ITHACA, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



ELEVATION IN FEET - BARGE CANAL DATUM

NOTES:

JUNE 1972 FLOOD LEVEL IS AN AVERAGE LEVEL.

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

CAYUGA LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 19

Keuka Lake

Keuka Lake is rather extensively developed with both seasonal and permanent residences which account for the relatively high flood damage. The June 1972 flood stage was the second highest of record and was exceeded by approximately one foot back in 1872. The June 1972 flood stage has an approximate frequency of 85 years. Table 12 lists the five highest recorded stages for Keuka Lake and their approximate frequency.

Outflow from the lake is regulated by a dam near the Main Street Bridge by the City of Penn Yan about one mile from the lake. The dam is operated in accordance with a rule curve developed by the Corps of Engineers. The outflow from Keuka Lake empties into Seneca Lake which at the time was experiencing flood problems of its own.

Inspection of the isohyetal maps on Plates 9 and 10 show that Keuka Lake is located in the part of the basin that received the most rainfall. Approximately ten inches of rain fell on the Keuka Lake drainage area from 21 to 26 June.

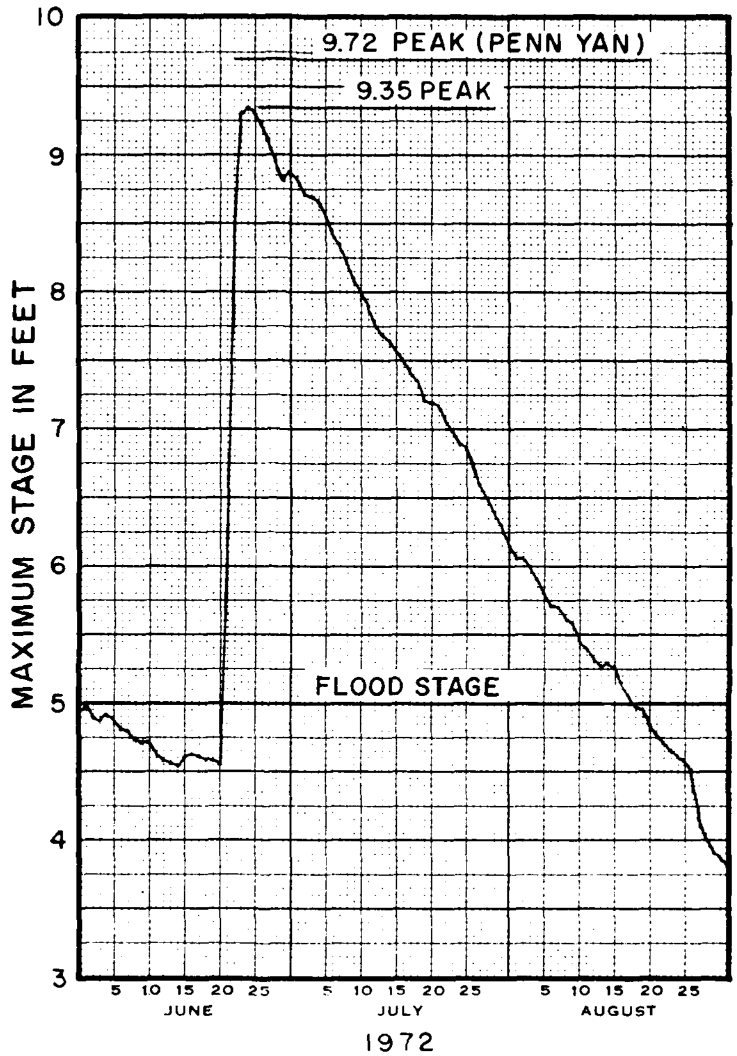
The stage hydrograph on Plate 20 shows that the water rose almost five feet in four days to a point over four feet above flood stage.

Stage-frequency and stage-damage curves are shown on Plates 21 and 22, respectively.

Table 12. - Five Highest Stages on Keuka Lake for the Period 1872, 1894, 1904, 1912-16, 1920-72

Order of Magnitude	Elevation*	Year	Approximate frequency (yrs.)
1	720.7	1872	180
2	719.7	1972	85
3	719.0	1935	50
4	718.5	1936	30
5	718.1	1894	25

* Gage located at Penn Yan. Elevations are on United States Coast and Geodetic Survey (U.S.C. & G.S.) datum.



NOTES:

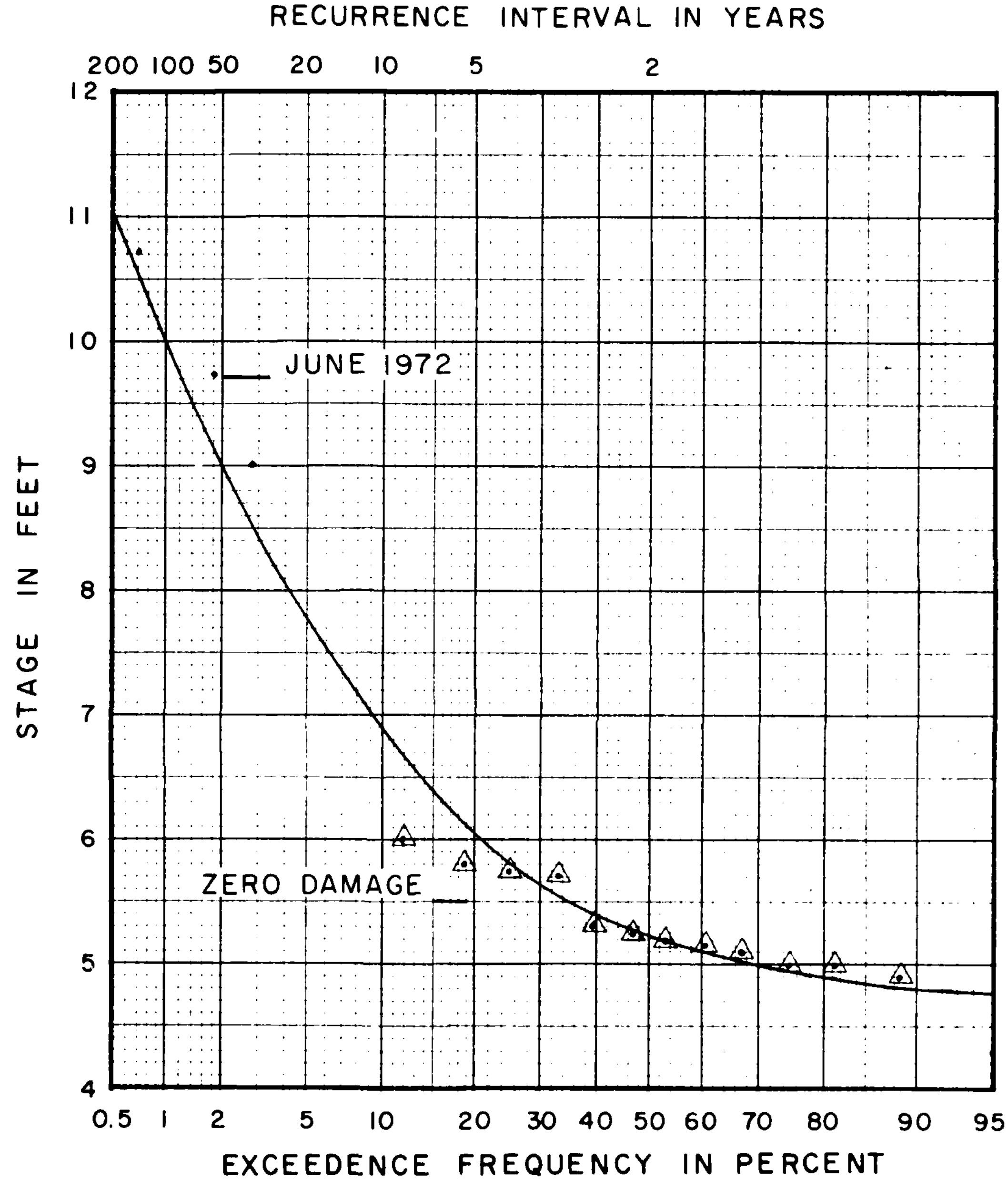
DATUM OF GAGE IS 710 FT. ABOVE MEAN SEA LEVEL, U.S.C. & G.S. DATUM.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE HYDROGRAPH

KEUKA LAKE
AT HAMMONDSPORT, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

DATUM OF GAGE IS 710.00 FT. ABOVE MEAN SEA LEVEL, U.S.C. & G.S. DATUM.

P.O.R. 1872, 1935, 1959-1972 (16 YEARS).

△ BASED ON EXISTING REGULATION PLAN FOR KEUKA LAKE.

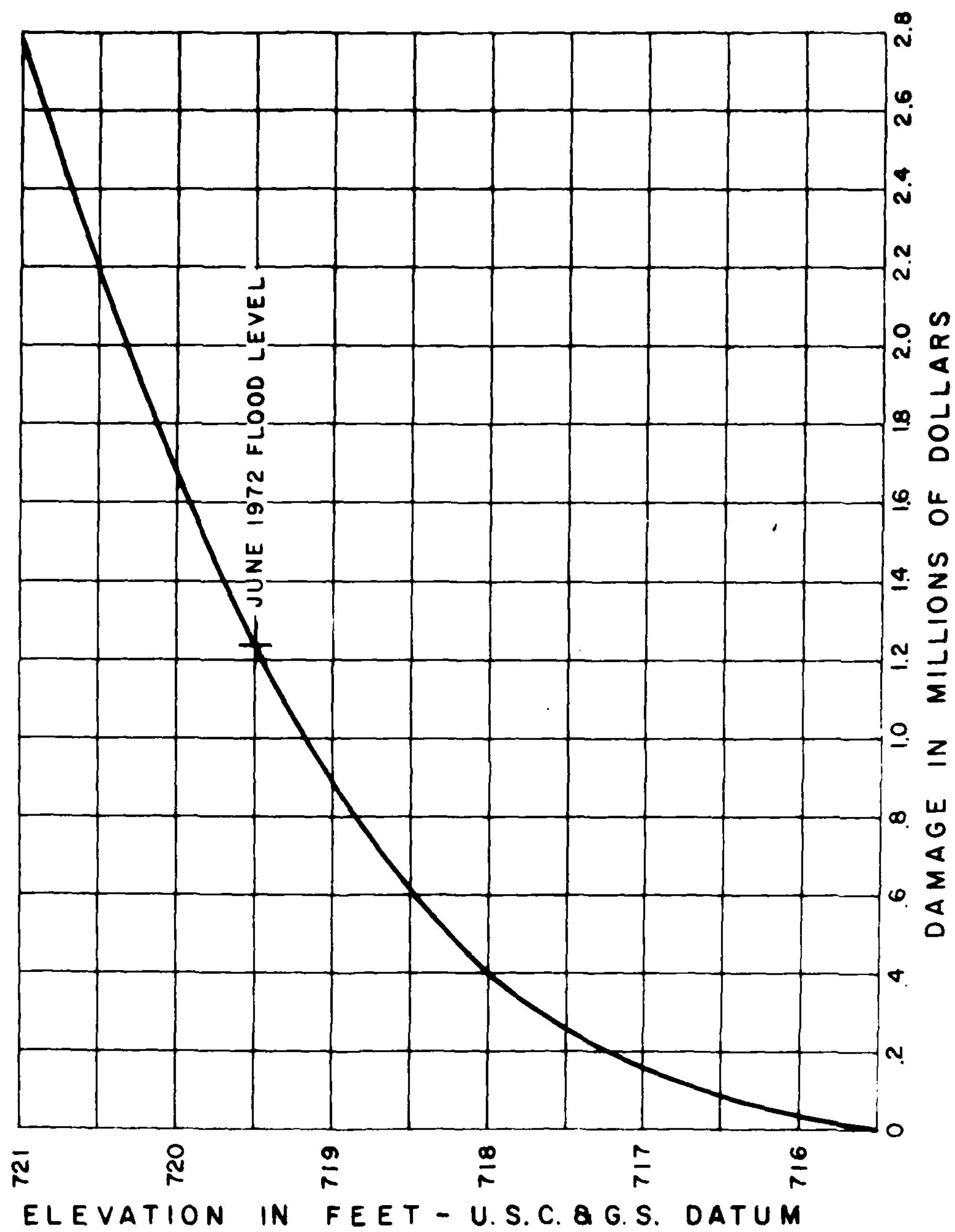
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

KEUKA LAKE AT PENN YAN N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

JUNE 1972 FLOOD LEVEL IS AN AVERAGE LEVEL

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

KEUKA LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

Oneida Lake

Oneida Lake is the largest in the Oswego River Basin. It has a surface area of approximately 80 square miles. It is 21 miles long and from two to five miles wide. Its shores are low and flat and there are large swampy areas on all sides. The New York State Barge Canal traverses Oneida Lake and its levels are regulated by a dam at Caughdenoy.

For the residents along Oneida Lake, the June 1972 flood was the second one of the year. Spring runoff had produced flooding early in May and the water had receded considerably from the first flood when "Agnes" occurred. The stage hydrograph on Plate 23 shows the peaks that occurred in both May and June 1972.

Areas particularly hard hit were the Beach Road and the Long Point Road areas in the Town of Cicero. These areas were also significantly affected in the May flood and some residents were not yet fully recovered from it when "Agnes" hit.

The June 1972 flood stage had been exceeded by 0.7 foot in 1936. However, due to recent development, the June 1972 flood was the most damaging flood ever recorded on Oneida Lake.

There is a U.S.G.S. water stage recorder on Oneida Lake at Brewerton. Table 13 lists the five highest recorded stages on Oneida Lake and their approximate frequency. The June 1972 flood has an approximate frequency of 50 years.

Figures 8 and 9 show flooding in the Long Point Road and Muskrat Bay areas, respectively.

Stage-frequency and stage-damage curves are shown on Plates 24 and 25, respectively.

Table 13. - Five Highest Stages on Oneida Lake for the Period 1925-1972

Order of Magnitude	Elevation (1)	Year	Approximate frequency (yrs.)
1	374.9 (2)	1936	100
2	374.2 (3)	1972	50
3	374.1 (2)	1940	40
4	373.9 (2)	1926	35
5	373.8 (2)	1925	30

(1) Elevations are on Barge Canal datum.
(2) Gage located at Caughdenoy.
(3) Gage located at Cleveland.

Figure 8 Aerial view looking west along Long Point Road at flood conditions on Oneida Lake. Photo taken 23 June 1973.

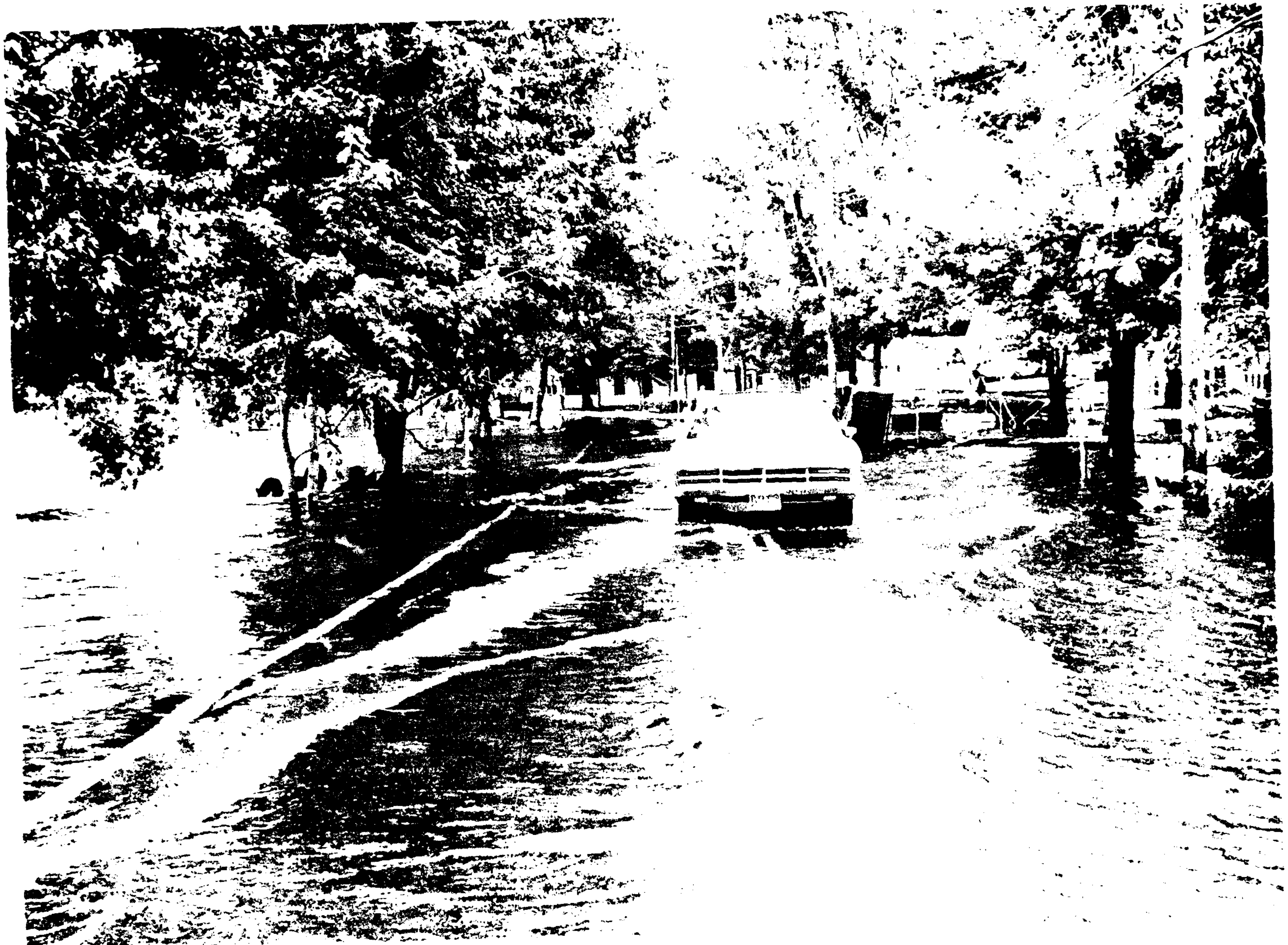
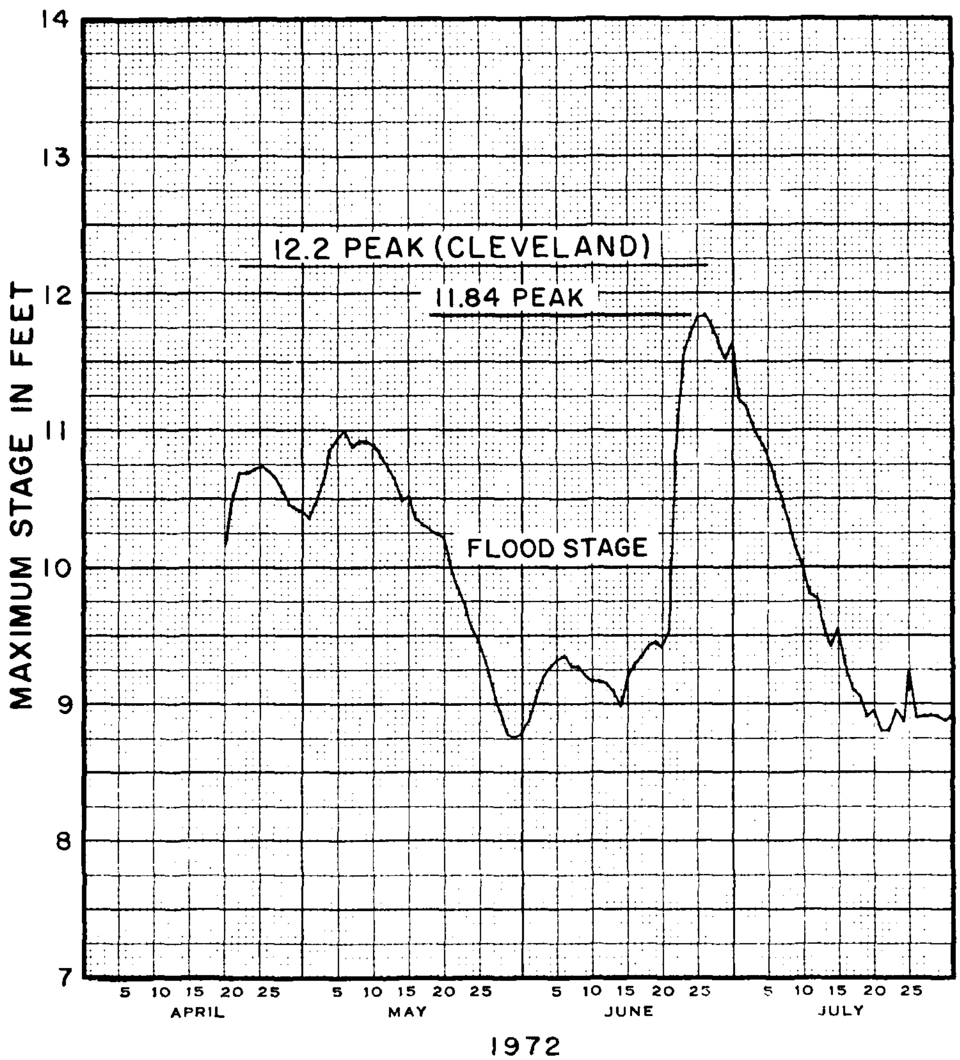


Figure 9 Flood conditions in the Muskrat Bay area of Oneida Lake. Photo taken 24 June 1972.



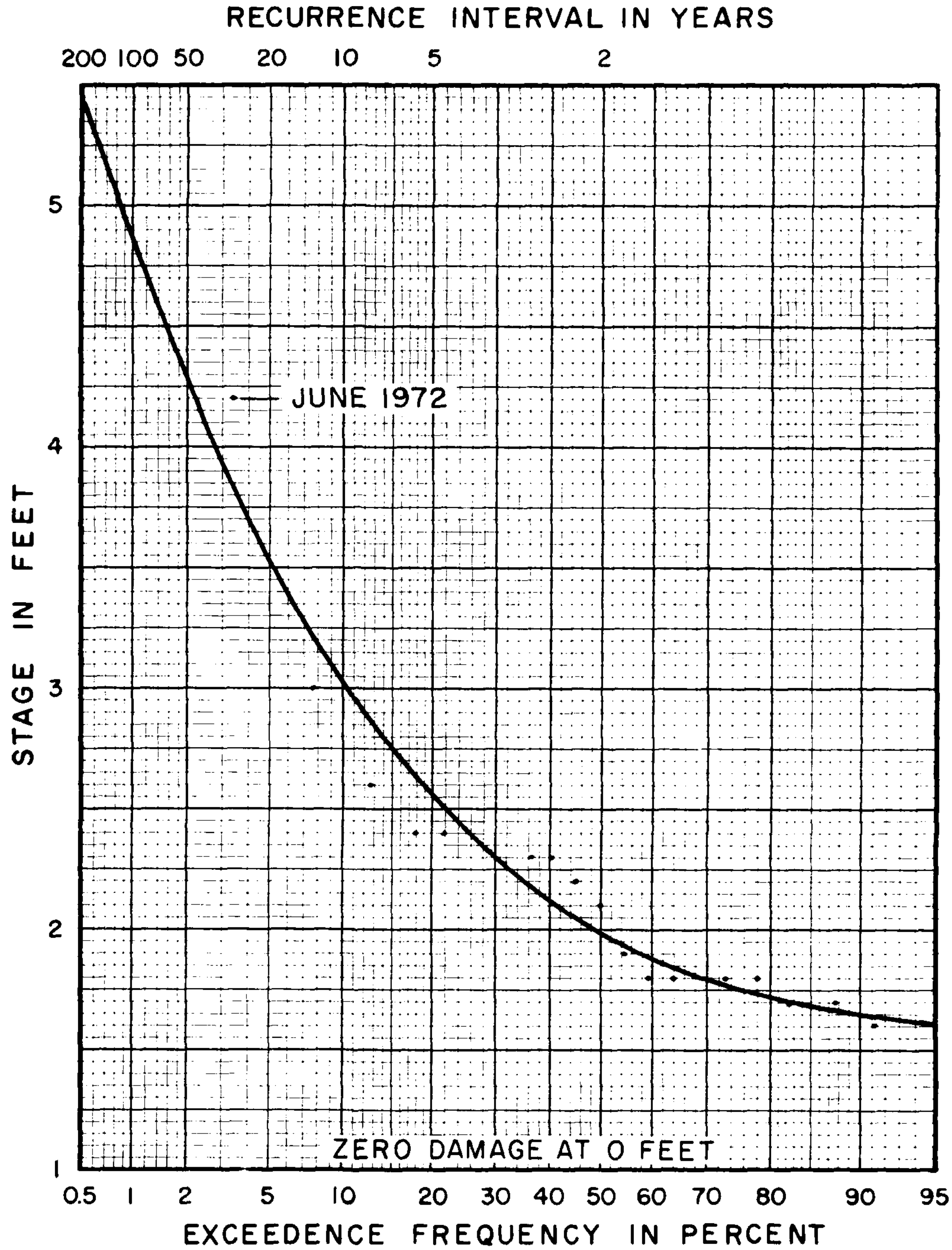
NOTES:

DATUM OF GAGE IS 362.0 FT. ABOVE MEAN SEA LEVEL, BARGE CANAL DATUM.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE HYDROGRAPH
ONEIDA LAKE
AT BREWERTON, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

DATUM OF GAGE IS 370.0 FT. ABOVE MEAN SEA LEVEL BARGE CANAL DATUM.

P.O.R. 1952–1967 (16 YEARS) AT CAUGHDNEOY.

P.O.R. 1968–1972 (5 YEARS) AT CLEVELAND.

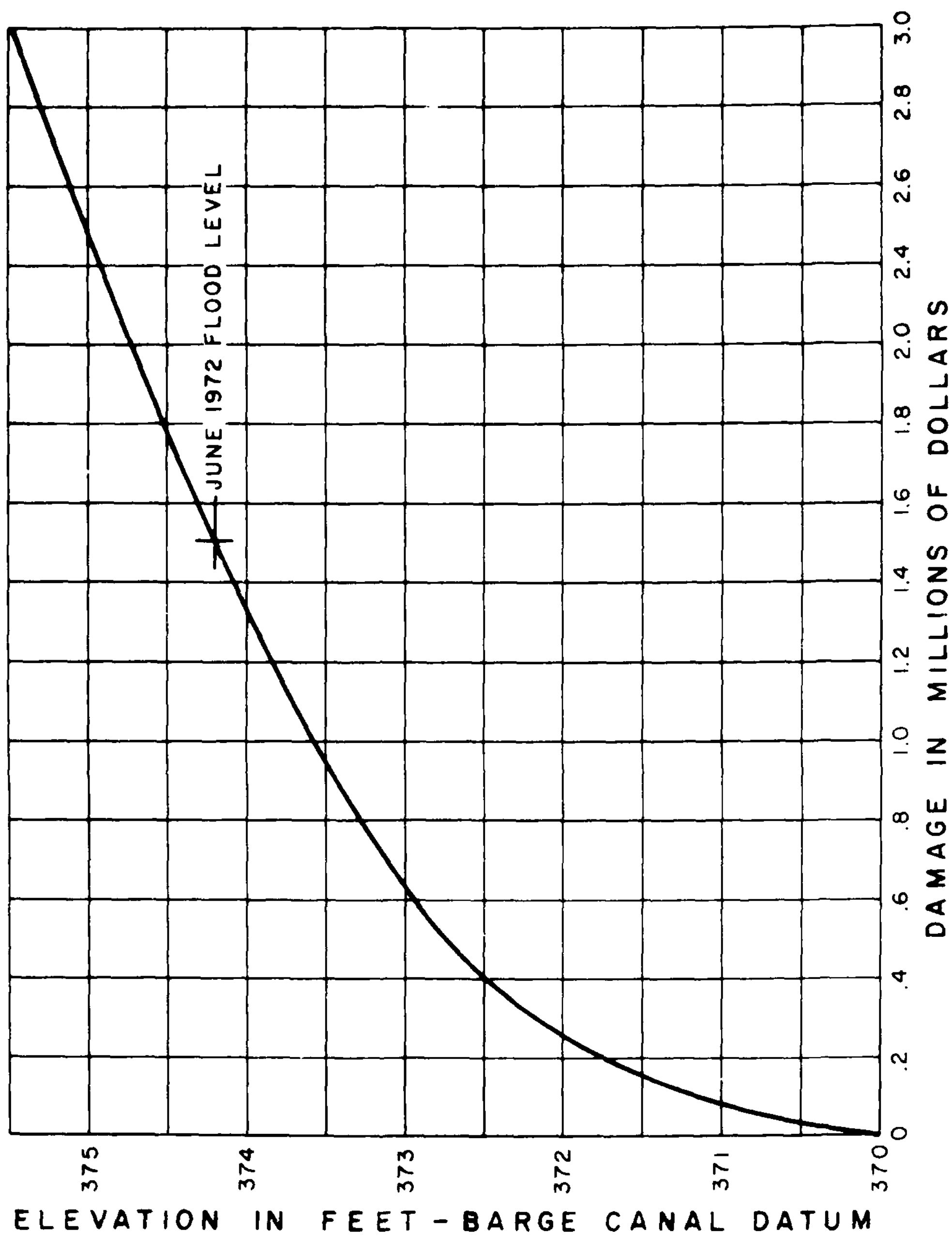
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

ONEIDA LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

ONEIDA LAKE

U.S. ARMY ENGINEER [illegible]

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REPORT OF FLOOD, TROPICAL STORM AGNES, JUN 1972, OSWEGO RIVER B--ETC(U)
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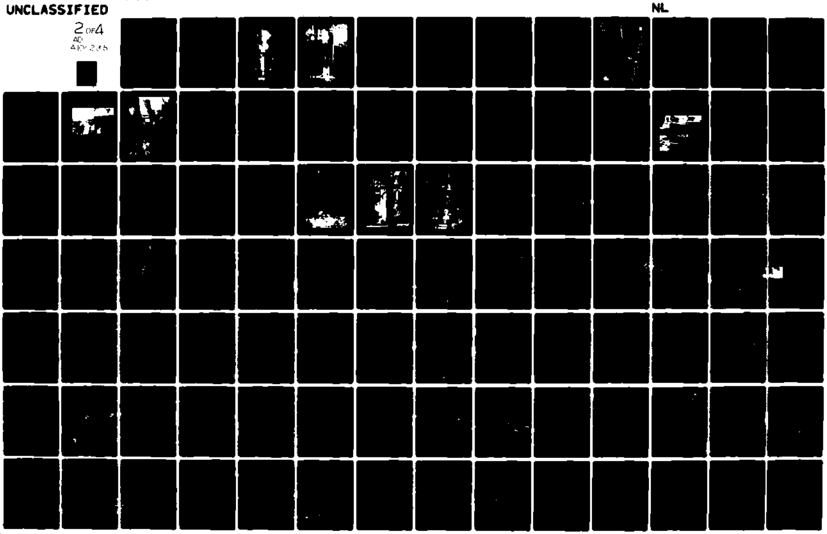


Onondaga Lake

Onondaga lake is unique in that there is no residential development around it. It is surrounded by a park, railroad embankment, highway embankment, and the Allied Chemical Company complex.

Considering the size of the lake, and the development around it, damage on the lake was relatively high. This is due in large part to the sedimentation that occurred in the New York State Barge Canal Terminal area on the inlet to the lake which required extensive dredging. The Onondaga Yacht Club Marina, the only one on the lake, was inundated and incurred considerable damage. See Figures 10 and 11.

The stage hydrograph on Plate 26 shows that the water rose approximately six feet from 20 June to 1 July to a point over four feet above flood stage. The levels on this lake are controlled by the water surface elevation on the Barge Canal which remained relatively high due to the large outflows from Canandaigua, Cayuga, Keuka, Owasco, Seneca, and Skaneateles Lakes. Also, Otisco Lake drains directly into Onondaga lake by way of Nine Mile Creek. All these factors plus approximately five inches of rainfall from 21 to 26 June contributed to the resultant high lake level.

The June 1972 flood stage has an approximate frequency of 20 years. Table 14 lists the five highest recorded stages for Onondaga Lake and their approximate frequency.

Stage-frequency and stage-damage curves are shown on Plates 27 and 28, respectively.

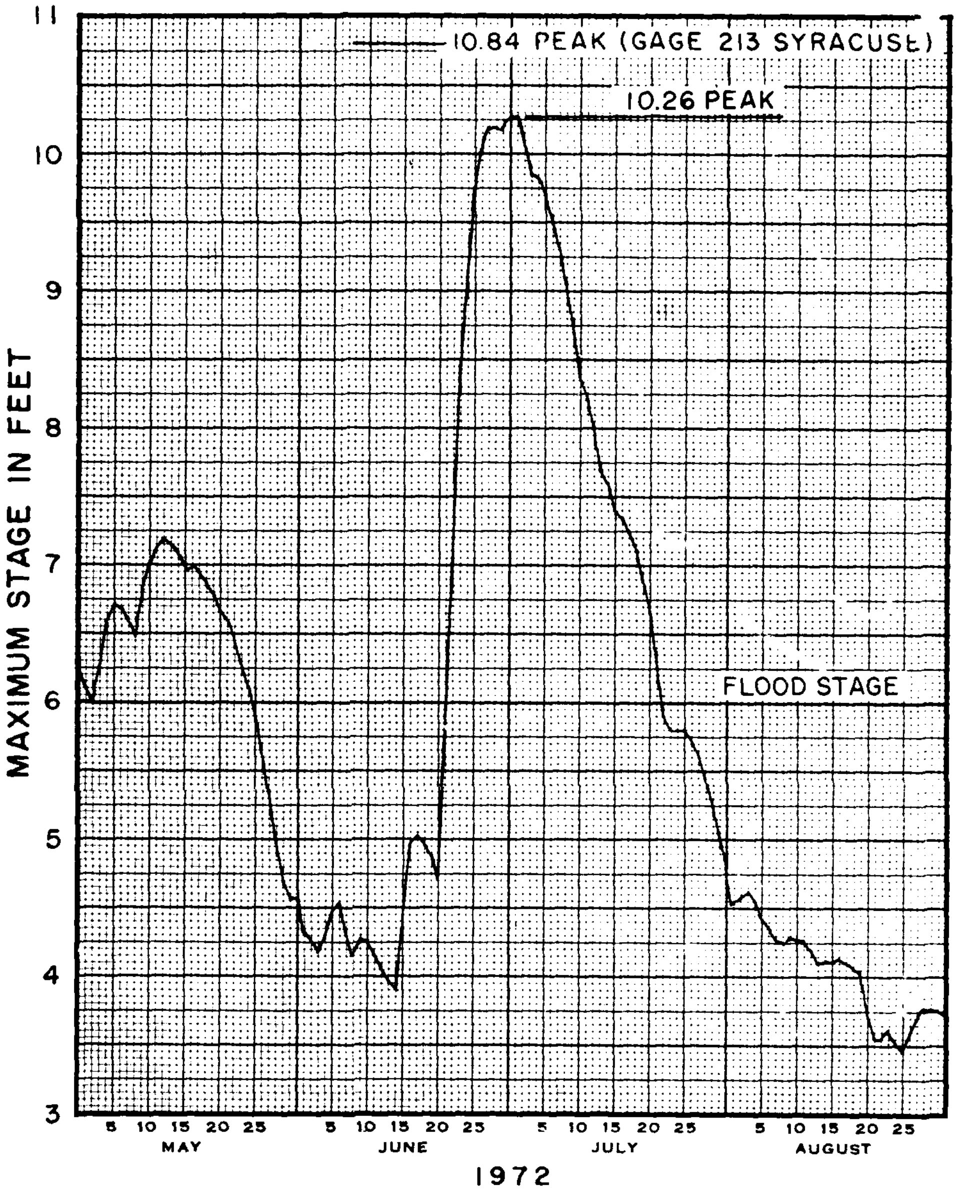
Table 14. - Five Highest Stages on Onondaga Lake for the Period 1930-1972

Order of Magnitude	Elevation*	Year	Approximate frequency (yrs.)
1	371.6	1936	35
2	371.5	1940	30
3	370.8	1972	20
4	370.5	1960	15
5	370.0	1950	10

* Barge Canal Gage number 213 located at Syracuse.

Figure 10 Flood conditions at Onondaga Yacht Club on Onondaga Lake. The bench behind the boat at the right in the photograph is on the edge of a wall. Photo taken 26 June 1972.

Figure 11 Flood conditions at Onondaga Yacht Club on Onondaga Lake. Photo taken 26 June 1972.



NOTES:

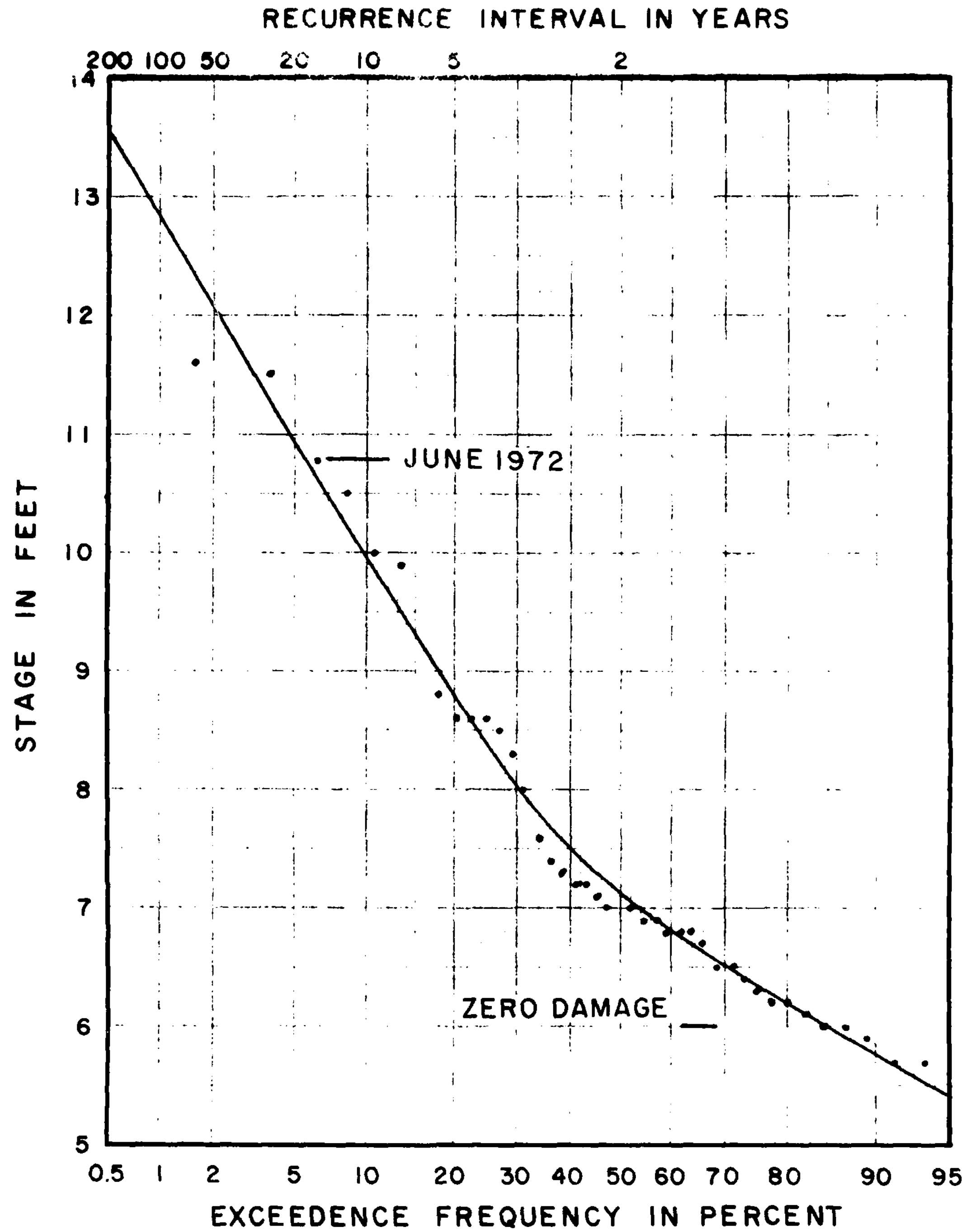
DATUM OF GAGE IS 360 FT. ABOVE MEAN SEA LEVEL.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE HYDROGRAPH

ONONDAGA LAKE AT LIVERPOOL N. Y.

U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

DATUM OF BARGE CANAL GAGE IS 360.0 FT. ABOVE MEAN SEA LEVEL.

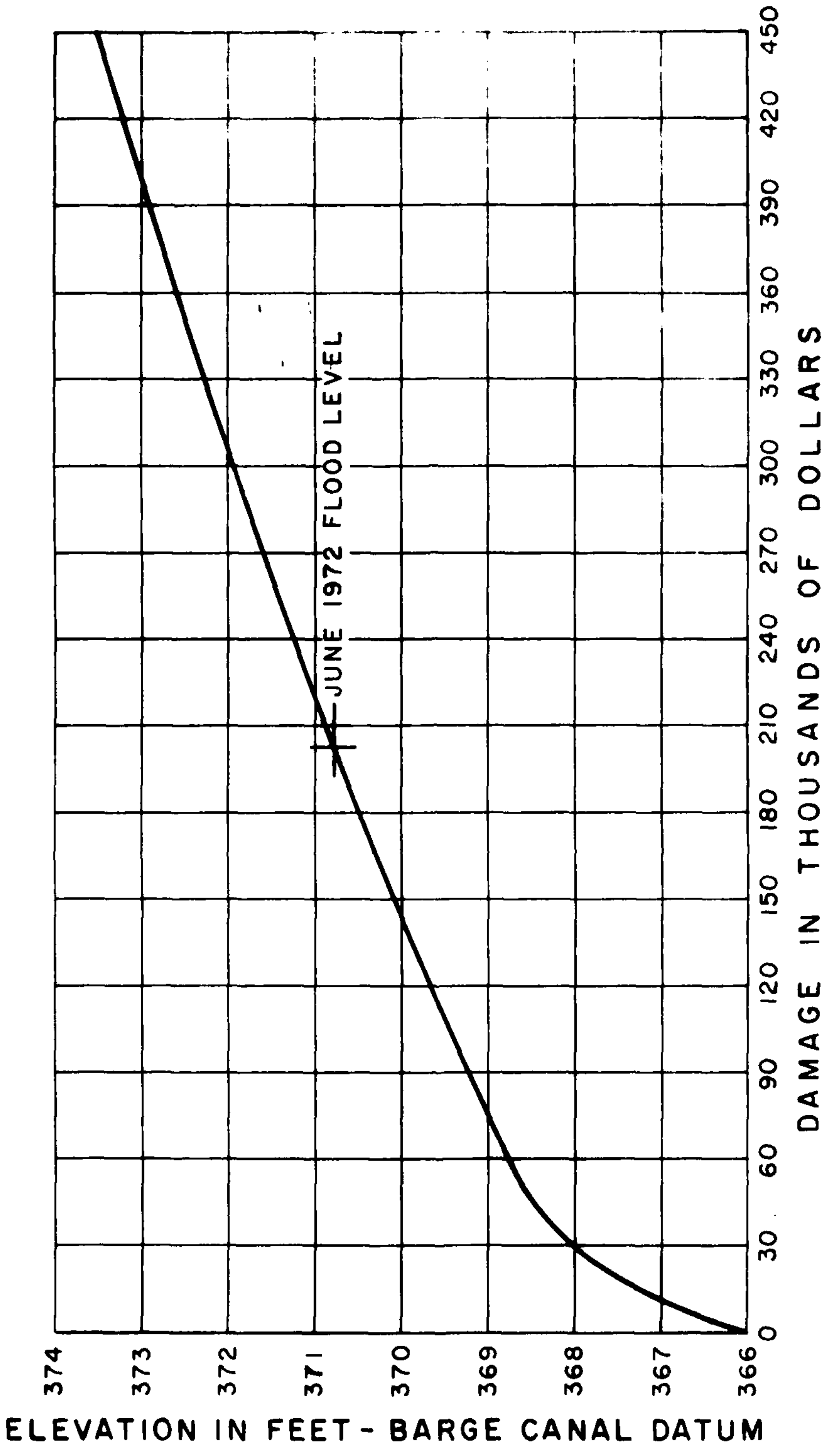
P.O.R. 1930-1972 (43 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
ONONDAGA LAKE AT
GAGE 213, SYRACUSE, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

ONONDAGA LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 28

Otisco Lake

Otisco Lake is one of the smaller lakes in the Oswego River Basin and where physically possible is considerably developed with cottages and permanent residences. The outlet for Otisco Lake is Nine Mile Creek and the outflows are regulated by a dam on the Creek which is operated by the Onondaga County Water Authority which uses Otisco Lake for water supply.

The June 1972 flood exceeded the previous record high lake level of 1913 by approximately 0.5-foot and caused damages on both Otisco Lake and Nine Mile Creek. Figure 12 shows flooding on Nine Mile Creek at Camillus. Nine Mile Creek also flows through the Village of Marcellus which also incurred flood damage. The total estimated flood damage on Nine Mile Creek was $40,000.

Lake level records are kept by the Onondaga County Water Authority. Table 15 lists the five highest recorded stages and their approximate frequency. The June 1972 flood has an approximate frequency of occurrence of 100 years.

Stage-frequency and stage-damage curves are shown on Plates 29 and 30, respectively.

Table 15. - Five Highest Stages on Otisco Lake for the Period 1911-1964 and 1966-1972

Order of Magnitude	Elevation*	Year	Approximate frequency (yrs.)
1	789.0	1972	100
2	788.4	1913	30
3	788.2	1950	15
4	788.2	1956	15
5	788.2	1958	15

* Gage located at Otisco Lake Dam, U.S.C. & G.S. datum.

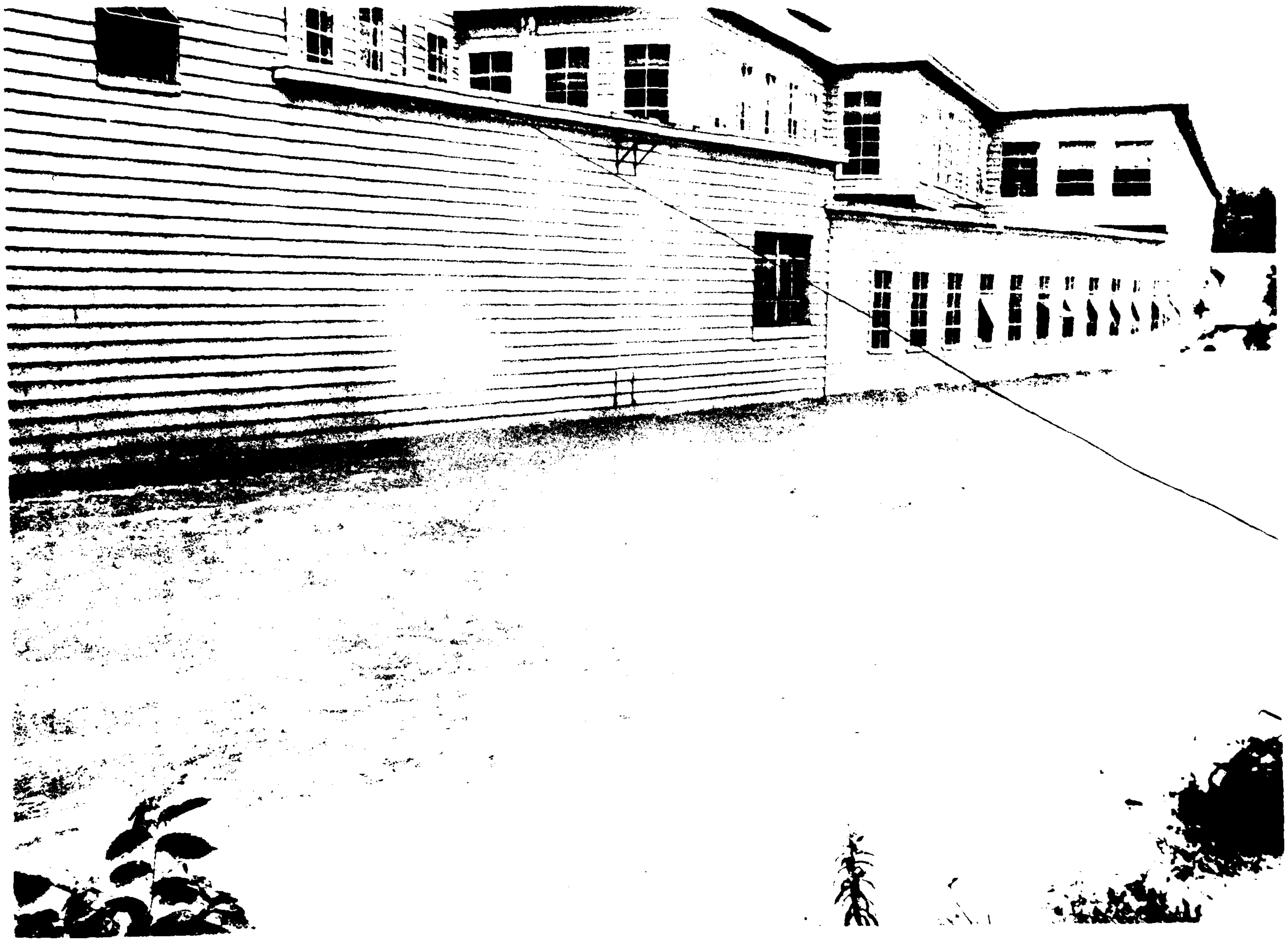
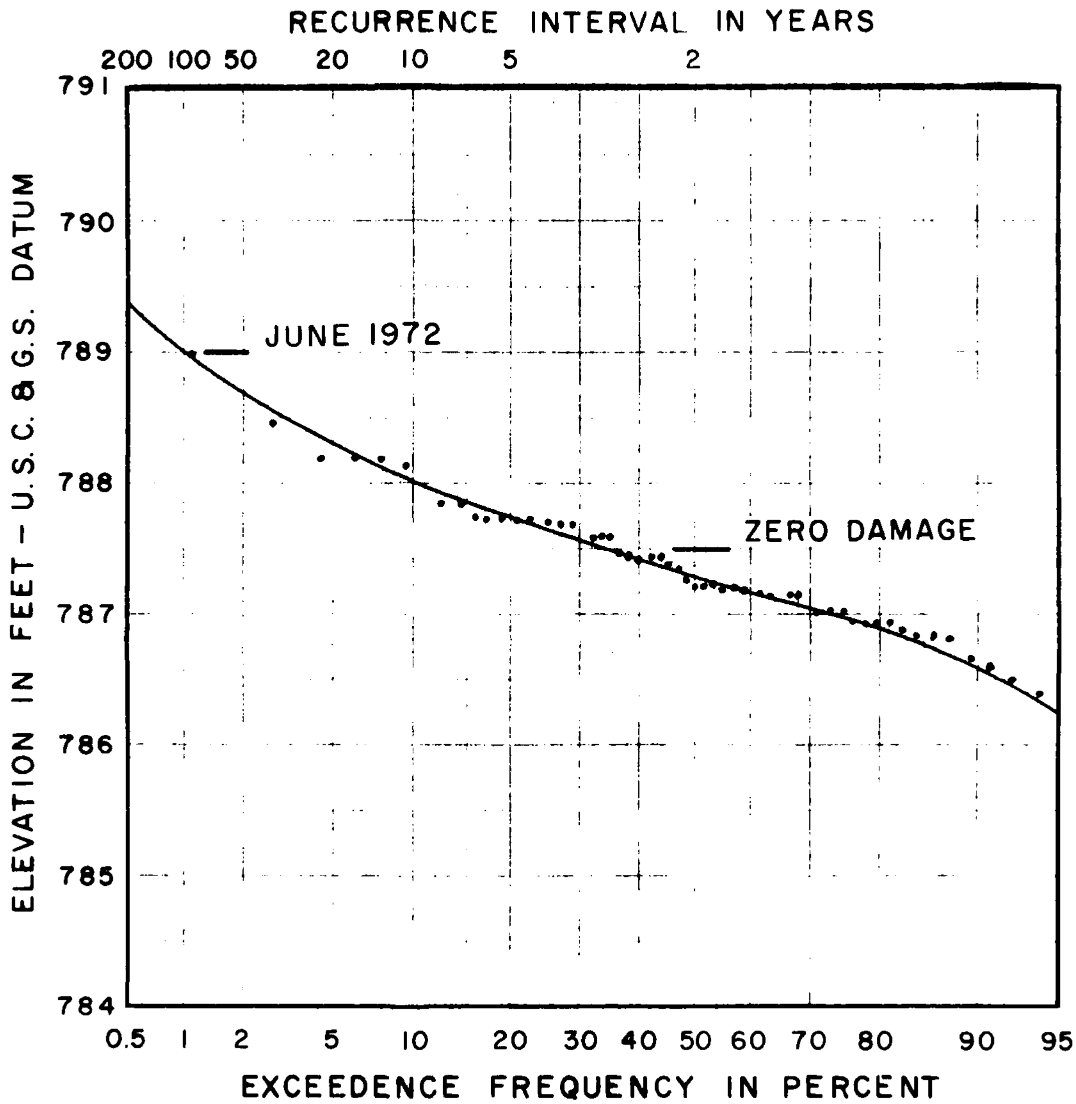


Figure 12 Flood conditions on Ninemile Creek at Camillus Cutlery Co., Camillus, NY.



NOTES:

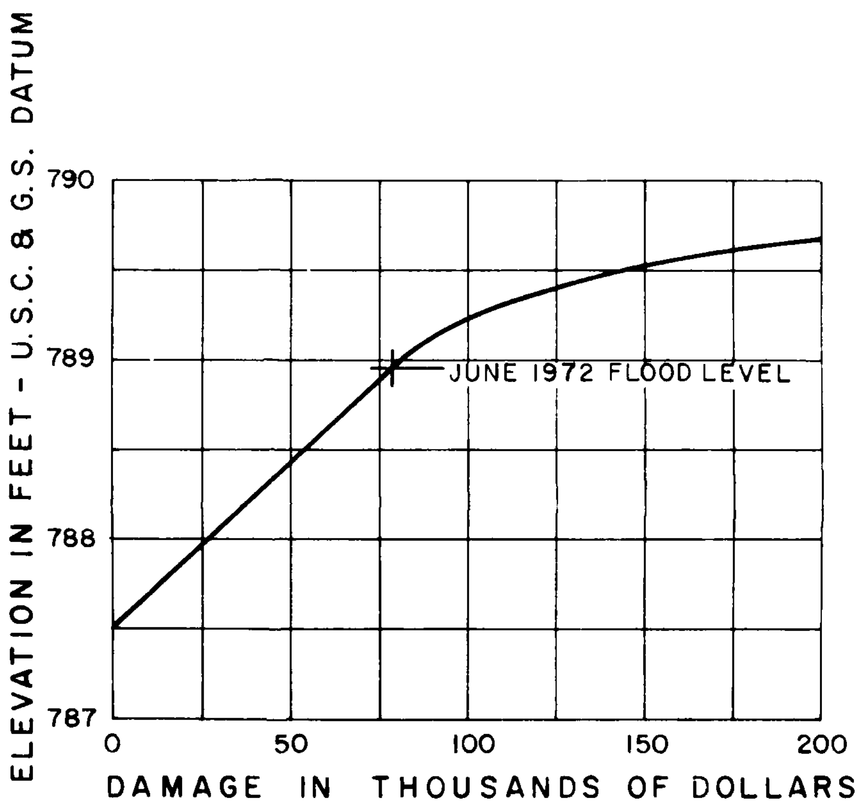
P.O.R. 1911-1964, 1966-1972 (61 YEARS).
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

OTISCO LAKE AT OTISCO, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

OTISCO LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

Owasco Lake

Owasco Lake is one of the smaller lakes in the Oswego River Basin and is considerably developed with cottages and permanent-type residences. During the June 1972 flood, one of the more dramatic events that occurred was on Owasco Outlet at the State Dam. The level of the June 1972 flood was higher than it had been since 1940 and it was feared that the State Dam might fail and send a large flood wave crashing through to the City of Auburn.

The Dam is operated by the City of Auburn in accordance with a regulation schedule prepared by the Corps of Engineers. The schedule is normally compatible with flood control, water supply and the recreational needs of the area.

Flooding has not been as severe recently as it was previous to adoption of the regulation schedule. However, the June 1972 flood was severe enough to cause a considerable amount of flood damage.

The Mill (Miller) St. dam, downstream of the State Dam, of stone masonry construction remained intact. However, the west abutment was washed out, throwing the force of the Owasco Outlet against the bluff causing severe erosion. Figure 13 shows the water overtopping the west abutment and Figure 14 shows the new stream bed cut through it.

Table 16 lists the five highest recorded stages on Owasco Lake and their approximate frequency. The stage of the June 1972 flood was exceeded twice since 1920, and has an approximate frequency of occurrence of 20 years.

Stage-frequency and stage-damage curves are shown on Plates 31 and 32, respectively.

Table 16. - Five Highest Stages on Owasco Lake for the Period 1920-1972

Order of Magnitude	Elevation*	Year	Approximate frequency (yrs.)
1	712.5	1936	40
2	712.5	1940	40
3	712.0	1972	20
4	711.6	1924	15
5	711.6	1958	15

* Gage located in Auburn with elevations on City of Auburn datum.

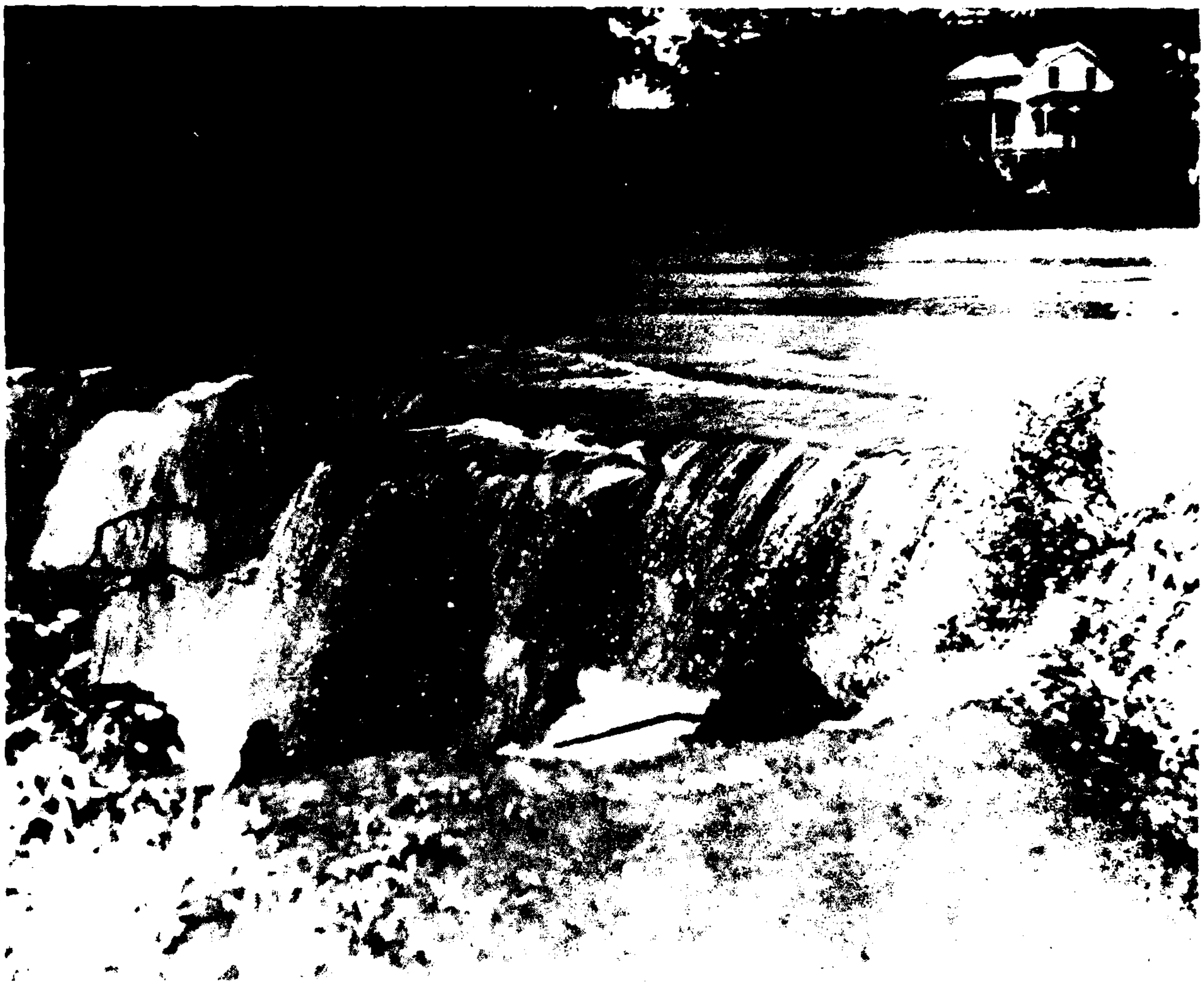
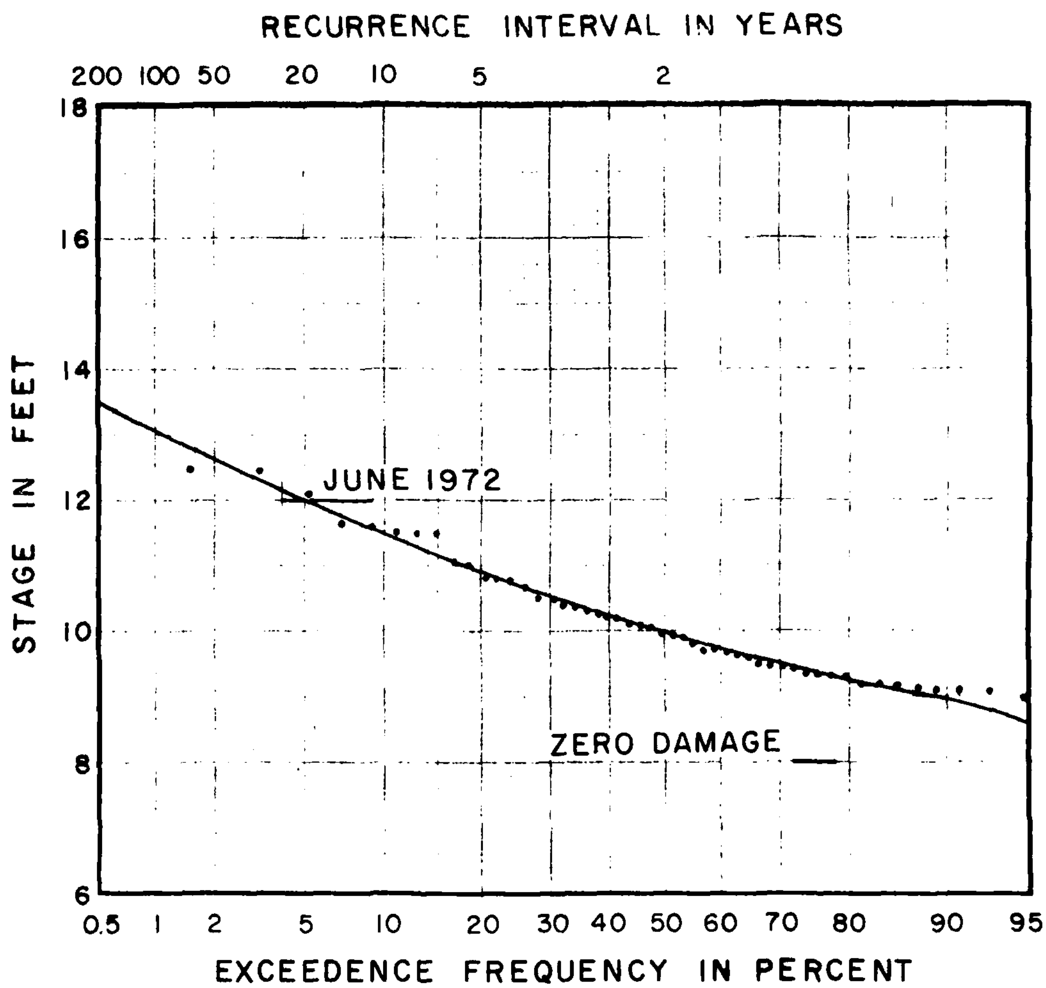


Figure 13 Flood waters top west abutment of Mill (Miller) Street Dam in Auburn on the Owasco Outlet.

Figure 14 West end of Mill (Miller) Street Dam and stream bed cut through west abutment by flood waters.



NOTES:

DATUM OF GAGE IS 700.00 FT. CITY OF AUBURN DATUM.

P.O.R. 1920-1972 (53 YEARS)

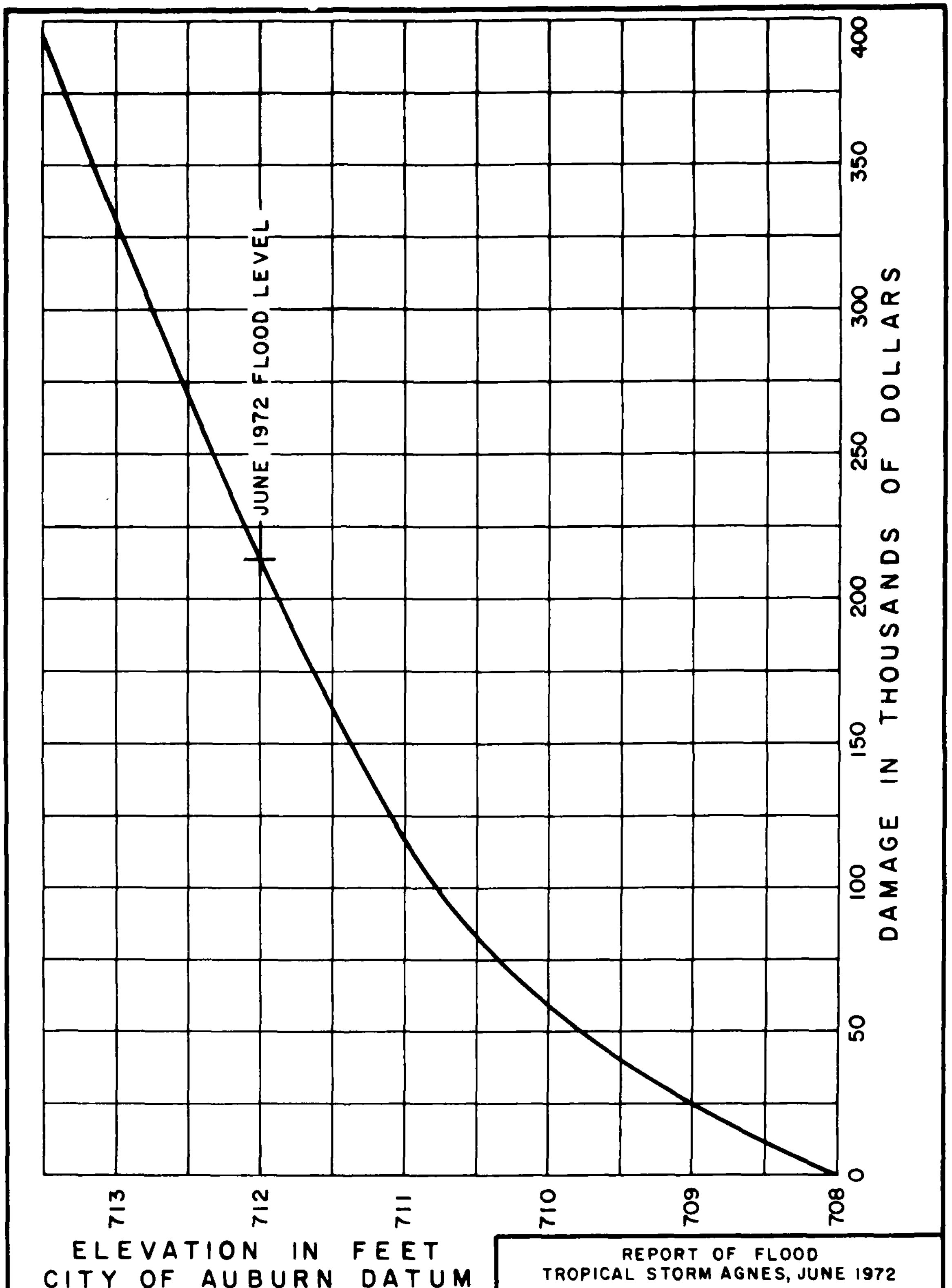
DOTS INDICATE PLOTTING POINTS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

OWASCO LAKE AT AUBURN, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

OWASCO LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

Seneca Lake

Seneca Lake is the largest of the Finger Lakes and contributes substantially to the natural resources of New York State. It is 633 feet deep at its deepest point. The shoreline is intensively developed with cottages except where the banks are too high and steep to permit development.

The City of Geneva is located at the north end of the lake and Watkins Glen is located at the south end. Watkins Glen is the site of the Grand Prix auto race and is a leading vacation center.

During the navigation season, under the present conditions of regulation, Seneca Lake elevation is maintained between 447.0 and 445.0, if possible. Prior to the navigation season the lake is drawn down to elevation 444.0 before March 10 to allow room for the storage of spring runoff. If spring runoff causes the lake to reach 447.0 or higher, water is released through a flood gate at the control structure at Waterloo which is the location of the first lock downstream of Seneca Lake on the Cayuga-Seneca Canal.

Standard efforts to avert flooding on Seneca Lake during Tropical Storm "Agnes" failed. As can be seen on the stage hydrograph on Plate 33, the lake rose approximately three feet from 20 June to 24 June.

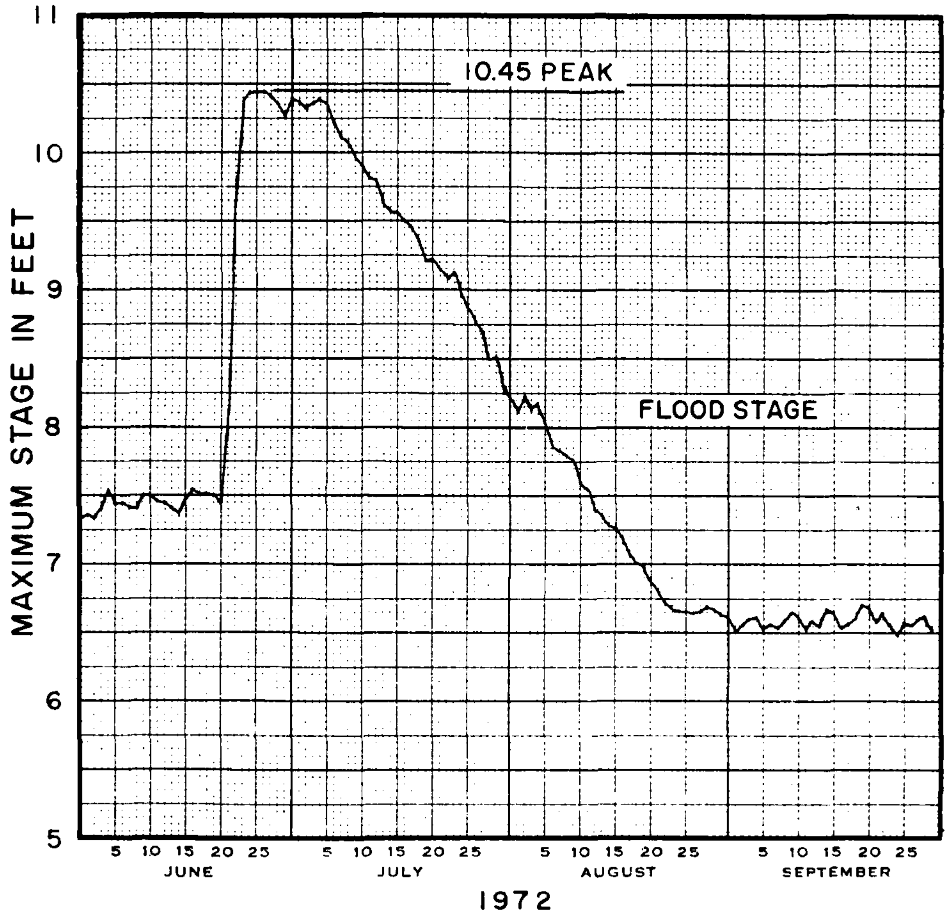
There is a U.S.G.S. water stage recorder on Seneca Lake located in Watkins Glen. Table 17 lists the five highest recorded stages and their approximate frequency. The June 1972 flood has an approximate frequency of occurrence of 100 years.

Stage-frequency and stage-damage curves are shown on Plates 34 and 35, respectively.

Table 17. - Five Highest Stages on Seneca Lake for the Period 1913-1972

Order of Magnitude	Elevation	Year	Approximate frequency (yrs.)
1	450.4	1972	100
2	449.3	1935	40
3	448.8	1936	20
4	448.7	1950	15
5	448.6	1927	15

U.S.G.S. continuous recording gage located at Watkins Glen, NY, from 1957 to present. All other elevations are daily readings from the Barge Canal Gage located at Watkins Glen. Elevations are on Barge Canal datum.



NOTES:

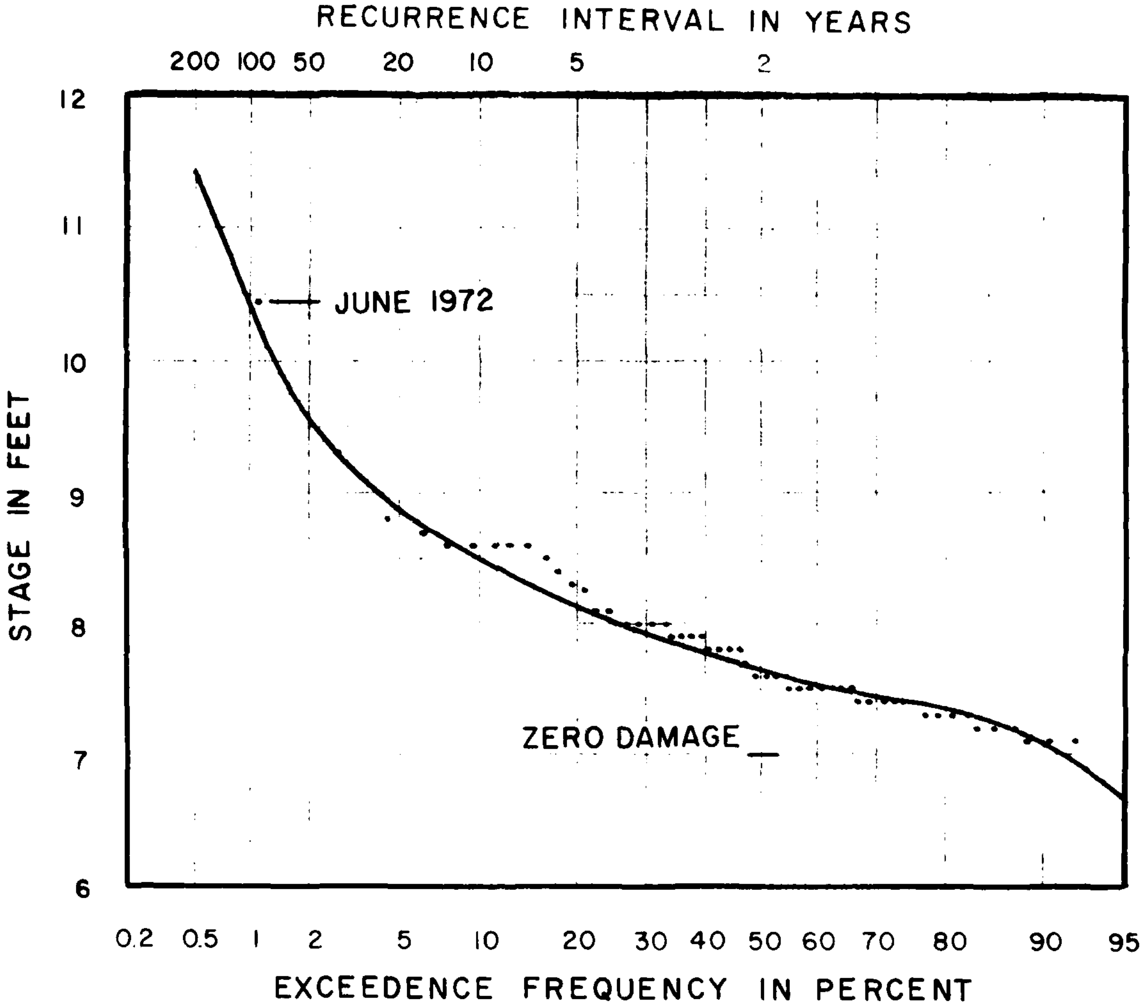
DATUM OF GAGE IS 438.41 FT. ABOVE MEAN SEA LEVEL, (440.0 FT. BARGE CANAL DATUM.)

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE HYDROGRAPH
SENECA LAKE
AT WATKINS GLEN, N. Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 33



NOTES:

POR 1913-1972 (60 YEARS). U.S.G.S. CONTINUOUS RECORDING GAGE THIS LOCATION FROM 1957 TO PRESENT. ALL OTHER STAGES ARE DAILY READINGS FROM THE BARGE CANAL GAGE THIS LOCATION.

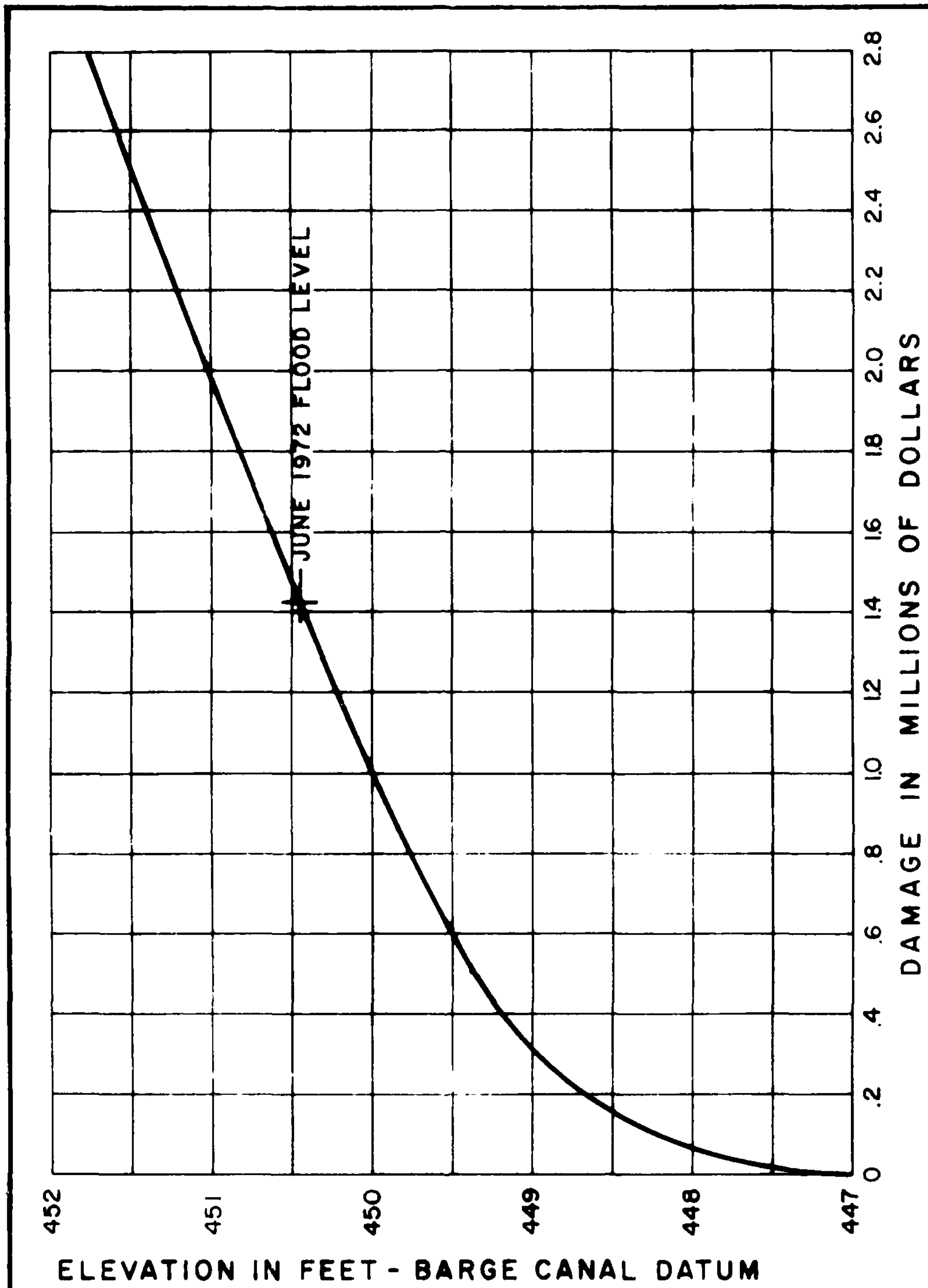
DATUM OF GAGE IS 438.41 FEET ABOVE MEAN SEA LEVEL, (440.0 FEET BARGE CANAL DATUM).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
SENECA LAKE AT WATKINS GLEN
NEW YORK

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

SENECA LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 35

Skaneateles Lake

Skaneateles Lake is located in the central part of the Oswego River Basin. Where possible, the shoreline is considerably developed with cottages and permanent-type residences. In recent years there has been a gradual trend of converting summer cottages to permanent residences.

The Village of Skaneateles is located at the north end of the lake. Here the outflow from Skaneateles Lake is regulated by the City of Syracuse which uses the lake as a source of water supply. Skaneateles Creek which is the natural outlet for the lake flows through the Village of Jordan.

The June 1972 flood on Skaneateles Lake reached a record level, breaking the previous record of 1922 by approximately 0.7 foot. Regulation of the lake became a source of irritation during the June 1972 flood as it has during past floods. Some residents on the lake felt that larger releases from the lake should have been made to help alleviate flood conditions on the lake while residents along Skaneateles Creek were of the opinion that larger releases would not have significantly reduced levels on the lake and would actually make matters worse by flooding them, too. The control structure was operated to convey by conduits as much water as possible to City of Syracuse reservoirs and to release as much water as possible down Skaneateles Creek without flooding the residents along it. Figure 15 shows flooding conditions on Skaneateles Lake.

Lake level records are kept by the City of Syracuse. Table 18 lists the five highest recorded stages for Skaneateles Lake and their approximate frequency. The June 1972 flood stage has an approximate frequency of occurrence of 100 years.

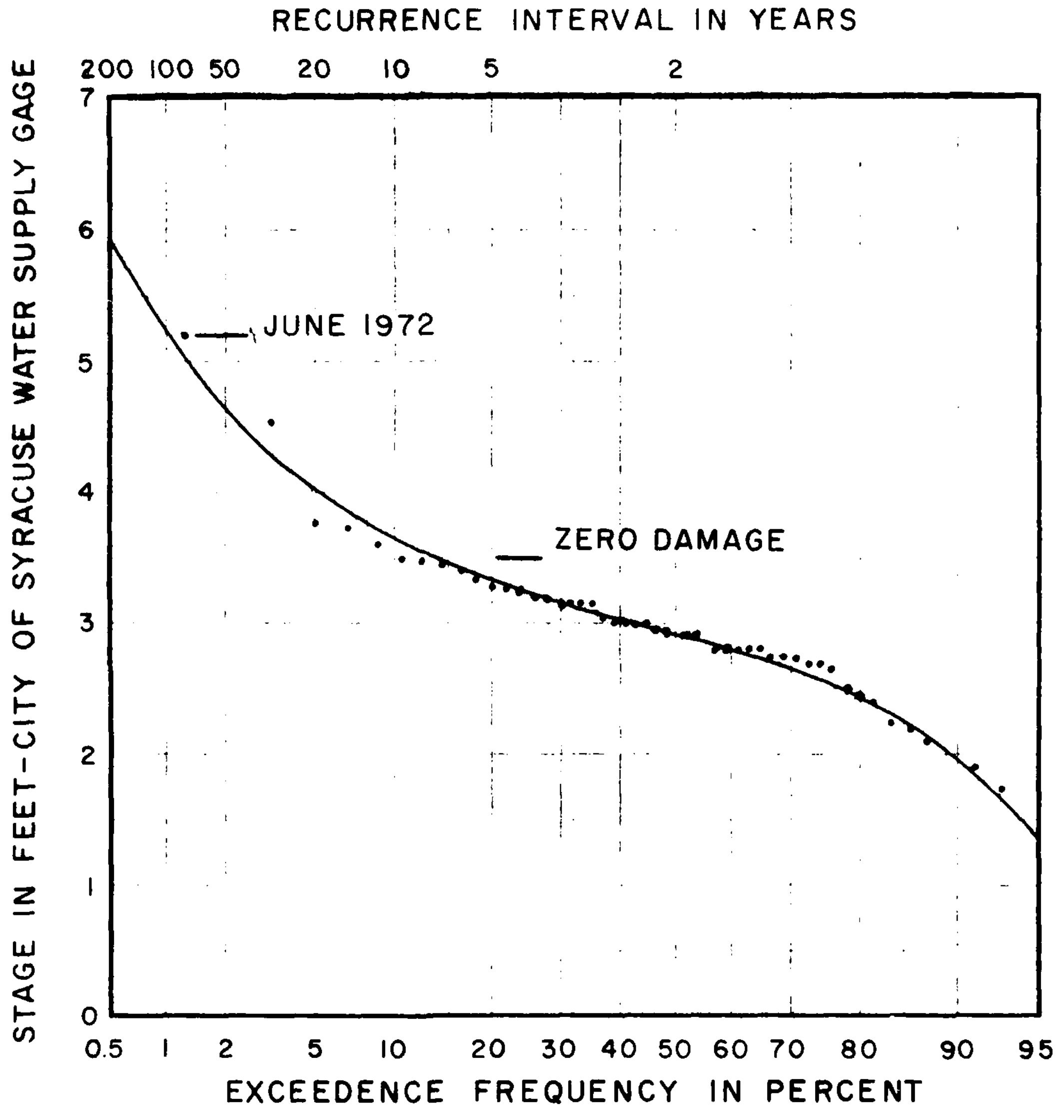
Stage-frequency and stage-discharge curves are shown on Plates 36 and 37.

Table 18. - Five Highest Stages on Skaneateles Lake for the Period 1920-1972

Order of Magnitude	Elevation*	Year	Approximate Frequency (Yrs.)
1	865.2	1972	100
2	864.5	1922	45
3	863.8	1923	15
4	863.7	1947	10
5	863.6	1950	10

*Gage located at Skaneateles, City of Syracuse Water Supply datum

Figure 15 Flooding along rear of Genesee St. businesses on Skaneateles Lake.



NOTES:

DATUM OF GAGE IS 860.00 FT. ABOVE MEAN SEA LEVEL, CITY OF SYRACUSE DATUM.

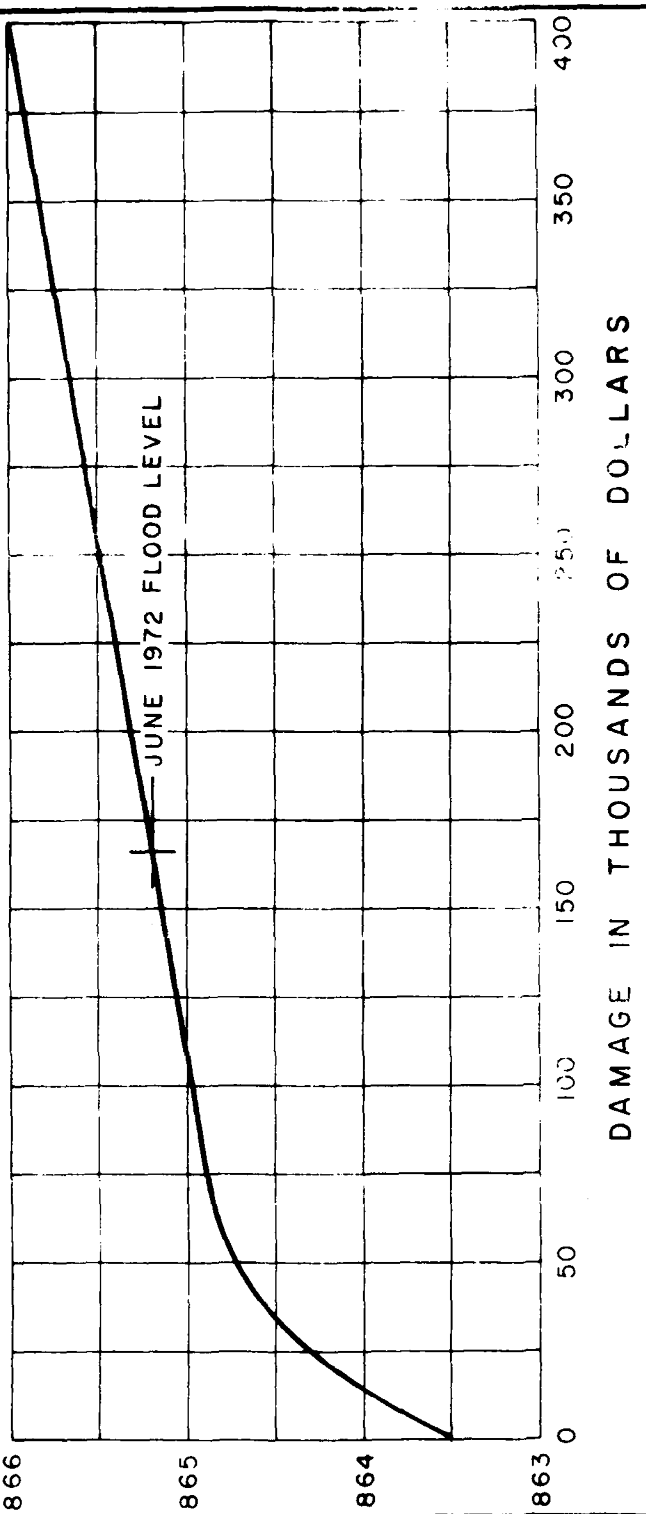
P.O.R. 1920-1972 (53 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
SKANEATELES LAKE
AT SKANEATELES, N.Y.

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



ELEVATION IN FEET
CITY OF SYRACUSE DATUM

NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT

NON-RECURRING DAMAGES ARE NOT INCLUDED.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVE

SKANEATELES LAKE

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

SENECA, CLYDE, ONEIDA, AND OSWEGO RIVERS AND THE NEW YORK STATE BARGE CANAL

The entitled rivers and the Barge Canal form the basic outflow network for the Lakes of the Oswego River Basin. Flooding along them is usually of longer duration than on other Buffalo District streams because of the prolonged periods of high outflows from the various lakes. Also, flooding usually occurs during the spring before heavy agricultural and recreational losses can be realized. These floods are generally the result of snowmelt runoff, augmented by moderate amounts of rainfall. "Agnes" was different in that it occurred after planting and after much of the fertilizing had been completed, and at the onset of the boating and recreation season. These factors helped to make "Agnes" one of the most damaging storms ever felt in the Oswego River Basin.

One of the more serious results of the flood was that many young farmers who had borrowed large amounts of money to establish sound farming operations were literally wiped out by the flood. The areas adjacent to the Seneca River in the Savannah-Montezuma Muckland is very fertile area and intensively farmed.

Flood waters in the Barge Canal were well above normal and flooded the residential areas of Jack's Reef, Baldwinsville, Hayes Road, and Horseshoe Island. Most areas along the Barge Canal that were flooded are within the limits of flowage easements owned by New York State. People have bought and elected to build in these areas and consequently have tasted the ravages of flooding.

Agricultural and non-agricultural damages were determined separately and their damage reach limits are different. Tables 19 and 20 give a brief description of the agricultural and non-agricultural damage reaches, respectively. Tables 21 and 22 give the estimated June 1972 flood damages and average annual damages by reaches.

Figures 16 through 18 show flood conditions along the Seneca River.

The flooded areas on Seneca, Clyde, Oneida and Oswego Rivers and the New York State Barge Canal are shown on Plates 38 through 52.

Stage-frequency and stage-damage curves are shown on Plates 53 through 105.

Table 19. - Agricultural Damage Reaches

Designation	:	Description
0-1	:	Oneida River - Brewerton to Caughdenoy
0-2	:	Oneida River - Caughdenoy to Three Rivers
0-3	:	Mud Creek
0-4	:	Six Mile Creek
OS-1	:	Oswego River - Three Rivers to Phoenix
S-3	:	Seneca River - Black, Butler, and Crusoe Creeks
S-4	:	Seneca River - Mays Point to Savannah Muck
S-5	:	Seneca River - Howland Island, Mud Pond, and Spring Lake Outlet
S-6	:	Seneca River - South of Canal, mud Lock to Port Byron
S-7	:	Seneca River - Port Byron to Weedsport
S-8	:	Seneca River - Muskrat Creek
S-9	:	Seneca River - Weedsport to Jack's Reef
S-10	:	Cross Lake
S-11	:	Seneca River - Jack's Reef to Baldwinsville
S-12	:	Dead Creek
S-13	:	Seneca River - Baldwinsville to Onondaga Lake
S-14	:	Seneca River - Onondaga Lake to Three Rivers
C-1	:	Clyde River - Lyons
C-2	:	Clyde River - Dublin Brook
C-3	:	Clyde River - Penn Central Railroad Bridge
C-4	:	Clyde River - Melvin Brook
C-5	:	Clyde River - Clyde Village to May's Point
C-6	:	Clyde River - Montezuma Marsh

Table 20. - Non-Agricultural Damage Reaches

Designation	Description	Length In Miles
1A	Oswego River - Lake Ontario to Phoenix	19.5
1	Oswego River - Phoenix to Three Rivers	2.4
2	Oneida River - Three Rivers to Big Bend Cut	1.1
3	Oneida River - Horseshoe Island	4.7
4	Oneida River - Big Bend Cut	1.0
5	Oneida River - Big Bend Cut to Caughdenoy	7.5
6	Oneida River - Caughdenoy to Oneida Lake	2.6
7	Seneca River - Three Rivers to Onondaga Lake Outlet	5.2
8	Seneca River - Onondaga Lake Outlet to Baldwinsville	4.9
9	Seneca River - Baldwinsville to State Ditch Cut	8.8
10	Seneca River - at confluence with State Ditch Cut	2.8
11	State Ditch Cut	1.0
12	Seneca River - Cross Lake to Owasco Outlet	9.5
13	NY State Barge Canal - Owasco Outlet to Montezuma Marsh	5.1
14	Seneca River - Owasco Outlet to Montezuma Marsh	8.7
15	NY State Barge Canal - in Montezuma Marsh	2.6
16	Clyde River - Cayuga Outlet to May's Point	2.3
17	Clyde River and NY State Barge Canal - May's Point to Lock E-26	6.1
18	Clyde River and NY State Barge Canal - Lock E-26 to downstream confluence of Clyde River and NY State Barge Canal	3.6
19	NY State Barge Canal between confluences of Clyde River and NY State Barge Canal	5.7
20	Clyde River between confluences of Clyde River and NY State Barge Canal	8.2
21	NY State Barge Canal - Confluence of Reaches 19 and 20 to Lock E-27	3.1
22	Ganargua Creek - Lock E-27 to Ganargua side spillway	11.6
23	NY State Barge Canal - Ganargua side spillway to Lock E-29	3.0
24	NY State Barge Canal - Lock E-29 to Lock E-30	2.7
25	NY State Barge Canal - Lock E-30 to Fairport	7.1
26	Cayuga-Seneca Canal - Montezuma Marsh to Mud Lock CS-1	4.2
27	Cayuga-Seneca Canal - Mud Lock CS-1 to Locks CS-2 and 3 at Seneca Falls	3.1
28	Cayuga-Seneca Canal - Locks CS-2 and 3 at Seneca Falls to Lock CS-4 at Waterloo	4.3
29	Cayuga-Seneca Canal - Lock CS-4 at Waterloo at Seneca Lake	4.7

Table 21. - Estimated Agricultural Damages

Reach	Average Annual Damage	Acres Inundated	June 1972 Flood Damage (1)
	$		$
0-1	500	680	1,000
0-2	1,600	1,480	8,600
0-3	700	250	8,800
0-4	8,900	2,100	65,500
OS-1	600	70	4,200
S-3	1,500	1,350	19,500
S-4	46,500 (2) 79,900 (3)	6,150	522,000
S-5	20,600	5,170	15,100
S-6	9,200	2,390	59,500
S-7	3,100	1,000	15,100
S-8	0	0	0
S-9	2,900	1,000	26,100
S-10	600	1,470	2,900
S-11	1,400	730	6,900
S-12	100	210	200
S-13	1,200	1,110	3,800
S-14	200	1,110	1,100
C-1	100	160	100
C-2	1,400	1,030	9,400
C-3	3,200	2,910	12,400
C-4	500	290	6,100
C-5	4,700	2,960	24,000
C-6	300 (2) 2,900 (3)	2,060	64,200
TOTAL	109,800 (2) 145,800 (3)	35,680	876,500

(1) Based on price levels for the month of June, furnished by S.C.S. This table does not include hillside or tributary damage.
(2) Assume Farm levees remain in place.
(3) Assume Farm levees fail.

TABLE 22. - Estimated Non-Agricultural Damages

Reach	Average Annual Damage	June 1972 Flood Damage (1)			
		Residential	Commercial	Public & Other	Total
	$	$	$	$	$
1-A	N.A.	3,000	9,000	2,000	14,000
1	1,600	5,000	(2)	1,000	6,000
2	10,900	2,000	31,000	(2)	33,000
3	46,800	88,000	63,000	(2)	151,000
4	(2)	(2)	(2)	(2)	(2)
5	3,500	9,000	1,000	6,000	16,000
6	40,200	32,000	41,000	6,000	79,000
7	41,100	56,000	62,000	8,000	126,000
8	78,100	285,000	53,000	27,000	365,000
9	37,500	66,000	20,000	8,000	94,000
10	22,700	75,000	(2)	(2)	75,000
11	200	(2)	(2)	1,000	1,000
12	39,200	170,000	94,000	46,000	310,000
13	4,000	28,000	(2)	4,000	32,000
14	3,900	37,000	(2)	1,000	38,000
15	7,000	(2)	14,000	36,000	50,000
16	12,100	7,000	60,000	35,000	102,000
17	56,900	29,000	(2)	291,000	320,000
18	900	(2)	(2)	2,000	2,000
19	200	1,000	(2)	(2)	1,000
20	1,200	4,000	(2)	(2)	4,000
21	1,900	(2)	(2)	8,000	8,000
22	61,600	17,000	5,000	42,000	64,000
23	(2)	(2)	(2)	(2)	(2)
24	(2)	(2)	(2)	(2)	(2)
25	(2)	(2)	(2)	(2)	(2)
26	2,100	17,000	(2)	5,000	22,000
27	2,100	22,000	(2)	9,000	31,000
28	2,200	(2)	(2)	7,000	7,000
29	9,400	6,000	158,000	1,000	165,000
TOTAL	486,300	959,000	611,000	546,000	2,116,000

(1) Does not include hillside or tributary damage.

(2) Assumed to be negligible.

Figure 16 Flooding along Hayes Road between Red Rock and Cold Springs on the Seneca River.

Figure 17 Building under construction on Hayes Road inundated by flood waters from the Seneca River.

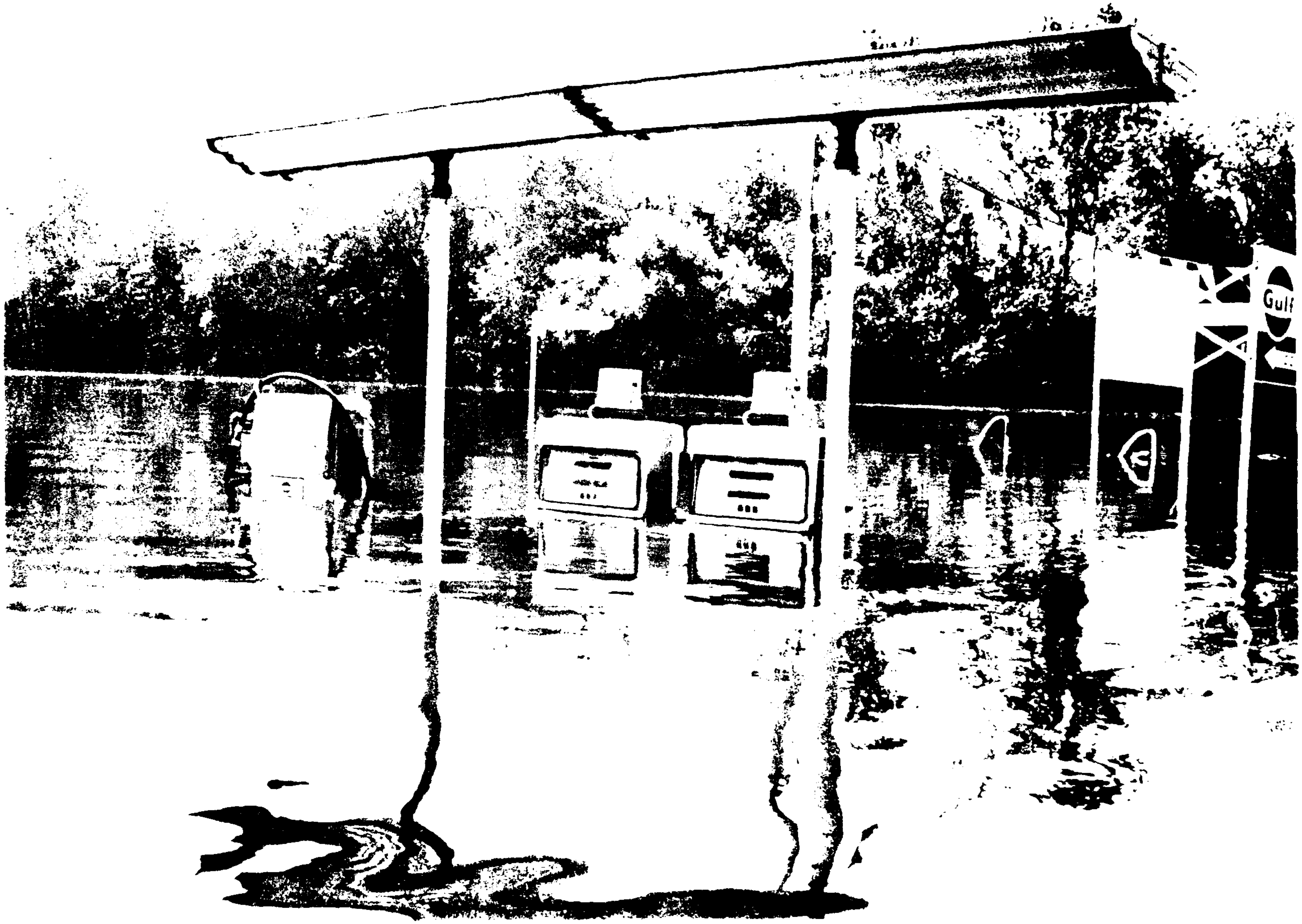
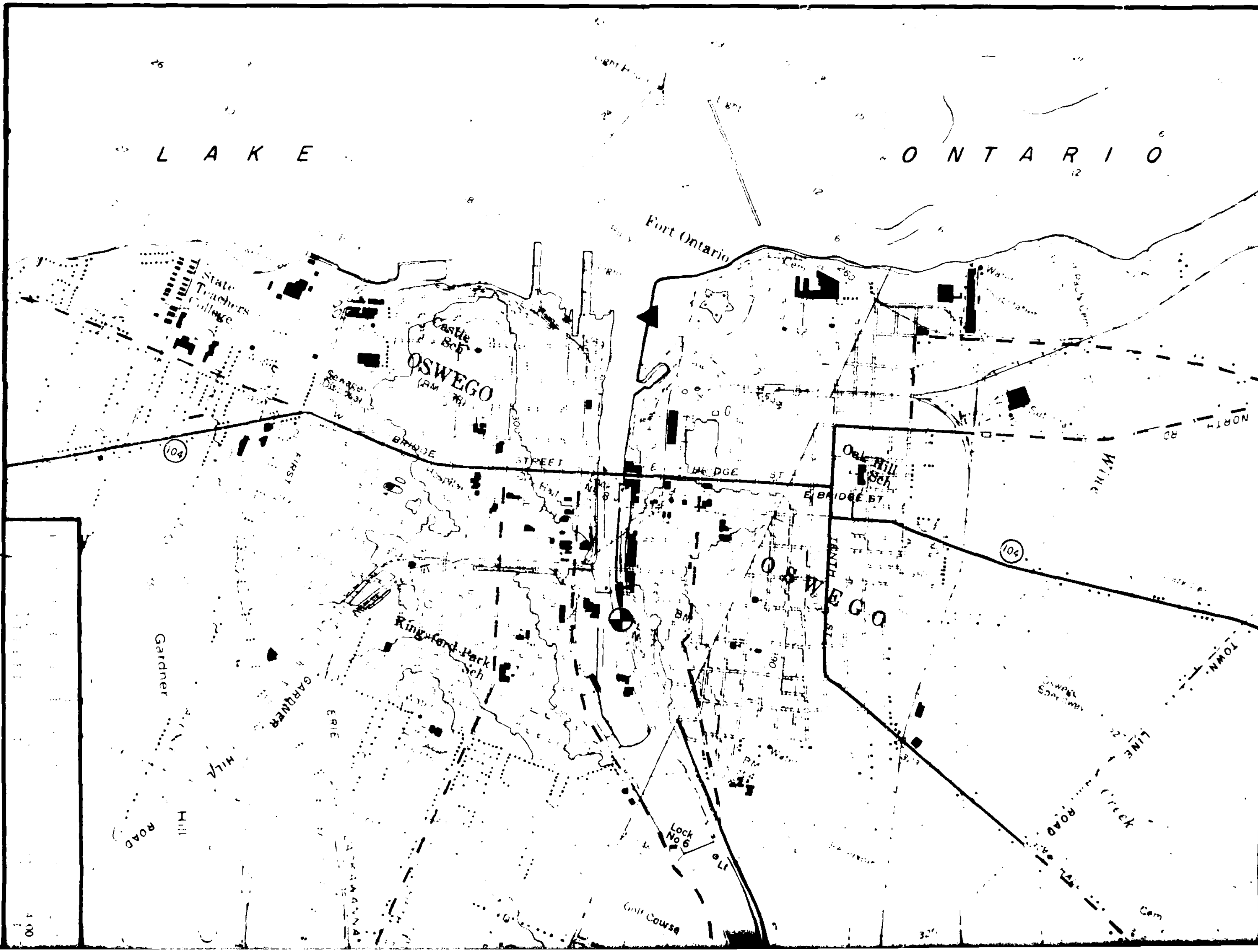
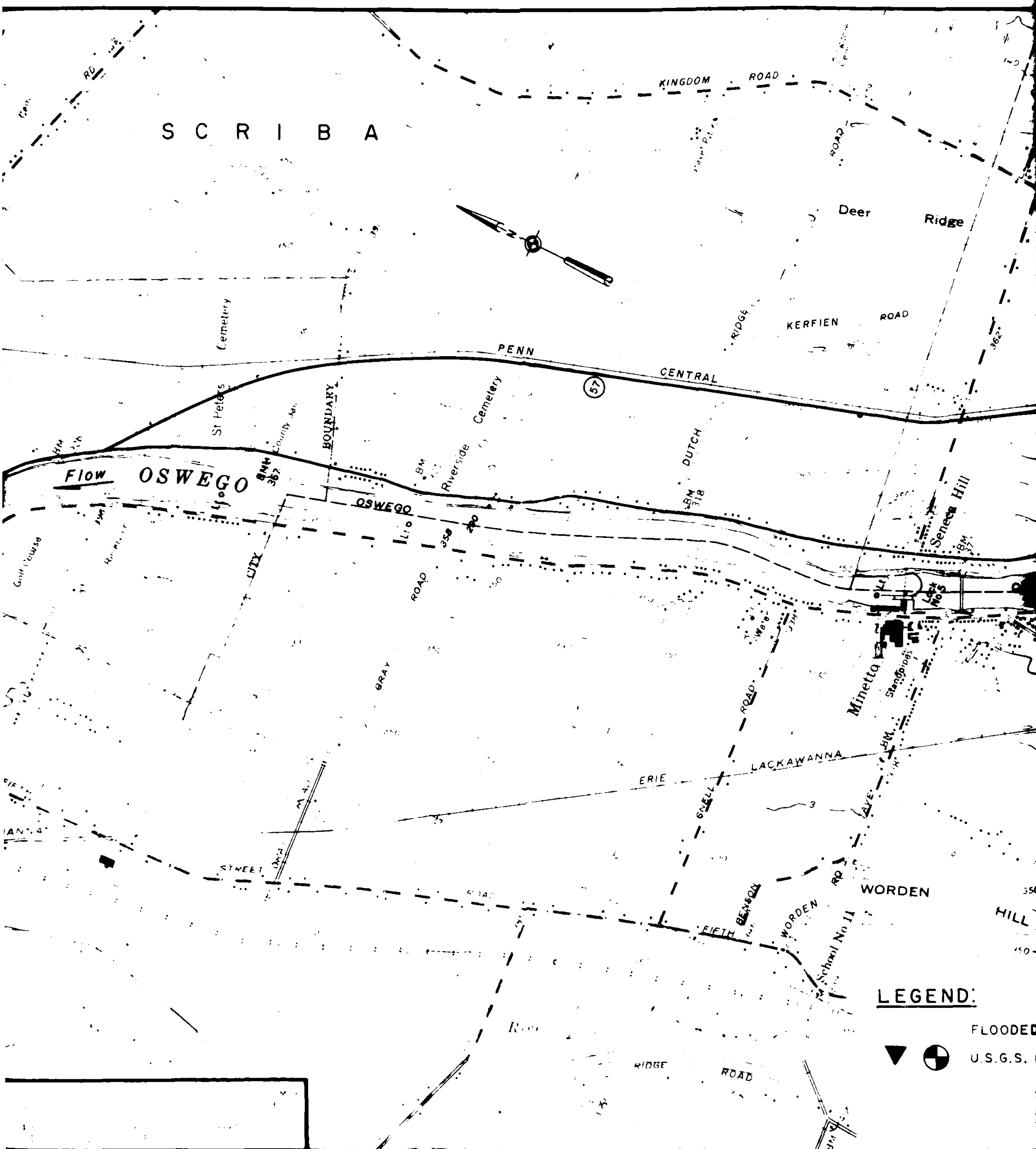
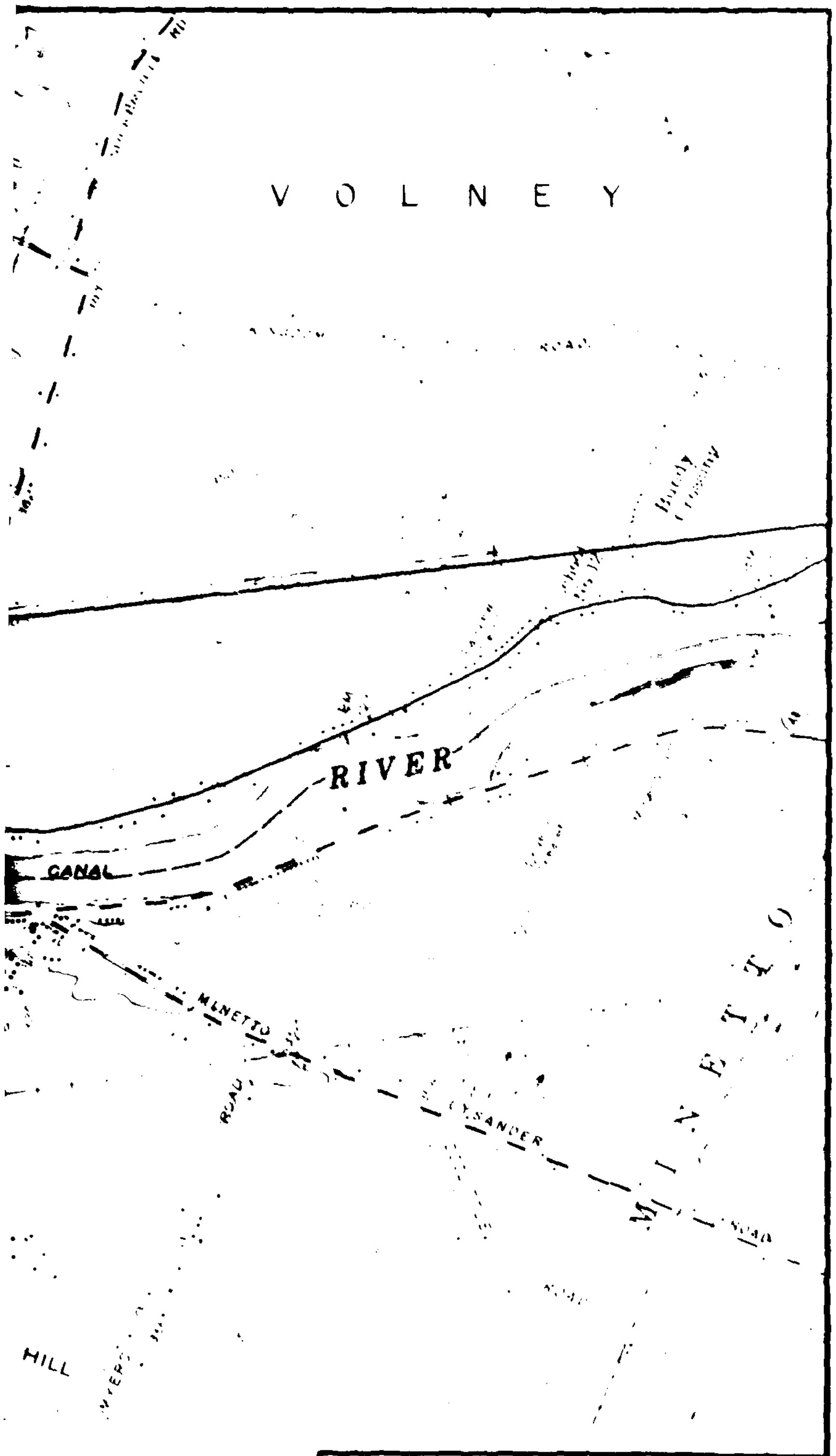


Figure 18 Flood waters from the Seneca River inundated service station on Hayes Road in the Cold Springs area.


LAKE ONTARIO
Fort Ontario
State Teachers College
Castle Sch
OSWEGO
W BRIDGE STREET
E BRIDGE ST
E BRIDGE ST
Oak Hill Sch
104
NORTH RD
Wine
TENTH ST
OSWEGO
Kingsford Park Sch
Lock No 6
Golf Course
GARDNER
ERIE
HILL
Gardner
Hill
ROAD
TOWN LINE ROAD
Creek
Cem



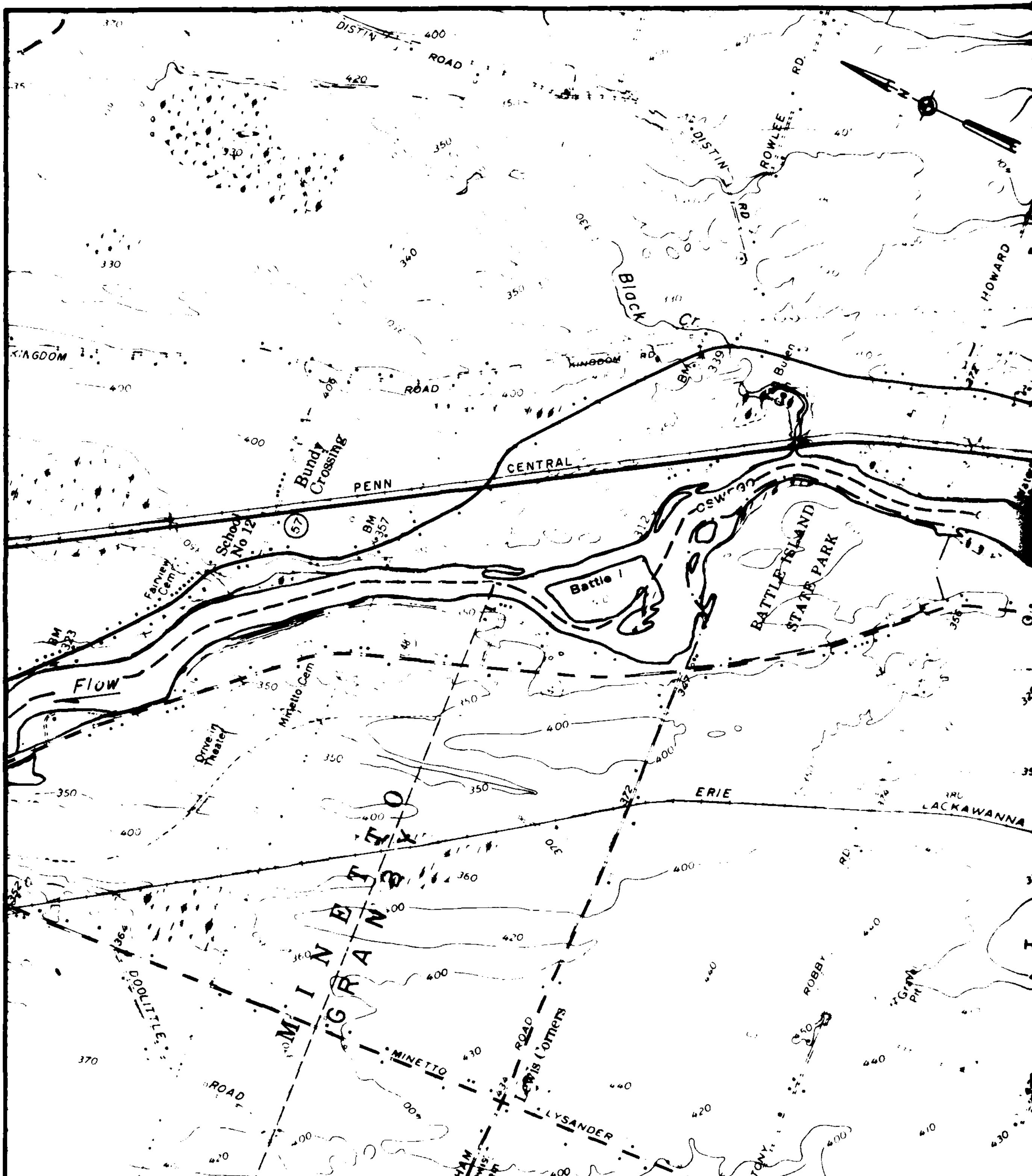
SCRIBA
KINGDOM ROAD
Deer Ridge
KERFIEN ROAD
PENN CENTRAL
57
St Peters Cemetery
BOUNDARY
Riverside Cemetery
DUTCH RIDGE ROAD
Flow
OSWEGO
OSWEGO
CITY
GRAY ROAD
Seneca Hill
Lock No 5
Minetta
Standpipes
ERIE LACKAWANNA
SNELL ROAD
AVE
WORDEN
HILL
WORDEN RD
BENSON
FIFTH
STREET
School No 11
RIDGE ROAD
LEGEND:
FLOODED
U.S.G.S.



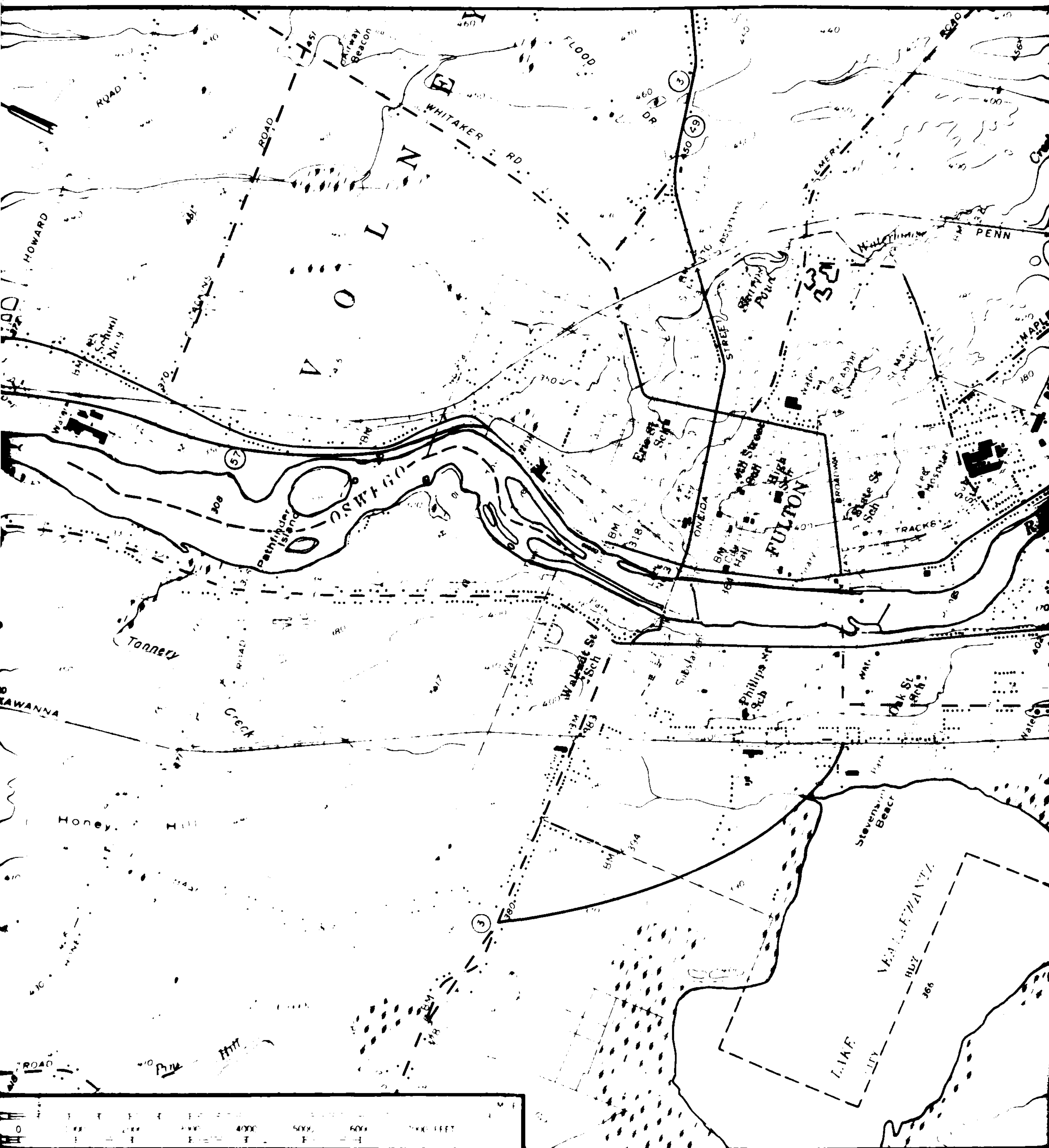
LOODED AREA

S.G.S. RECORDING GAGES

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
OSWEGO
FLOODED AREAS
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



DISTIN ROAD
DISTIN RD
ROWLEE RD
HOWARD
Black Cr
KINGDOM ROAD
KINGDOM RD
Bundy Crossing
PENN CENTRAL
School No 12
Fairview Cem
BM 357
BM 339
Flow
OSWEGO
Battle I
BATTLE ISLAND STATE PARK
Minetto Cem
Drive-in Theater
ERIE LACKAWANNA
MINETTO
GRANBY
DOOLITTLE ROAD
MINETTO LYSANDER ROAD
Lewis Corners
CUNNINGHAM ROAD
Lewis Cem
ROBBY RD
STONY ROAD
Rice Creek
Gravel Pit



Airway Beacon
FLOOD
DR
WHITAKER RD
ROAD
HOWARD
School No 9
V O L N E
OSWEGO
Pathfinder Island
Erie St Sch
Hill Street Sch
High Sch
FULTON
ONEIDA
STREET
City Hall
State St Sch
Lee Hospital
TRACKS
PENN
MAPLE
Tannery
Creek
Walnut St Sch
Phillips St Sch
Oak St Sch
Honey Hill
Pine Hill
ROAD
Stevensons Beach
LAKE
4000
5000
FEET

NOTES:

FOR LEGEND SEE PLATE 38.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

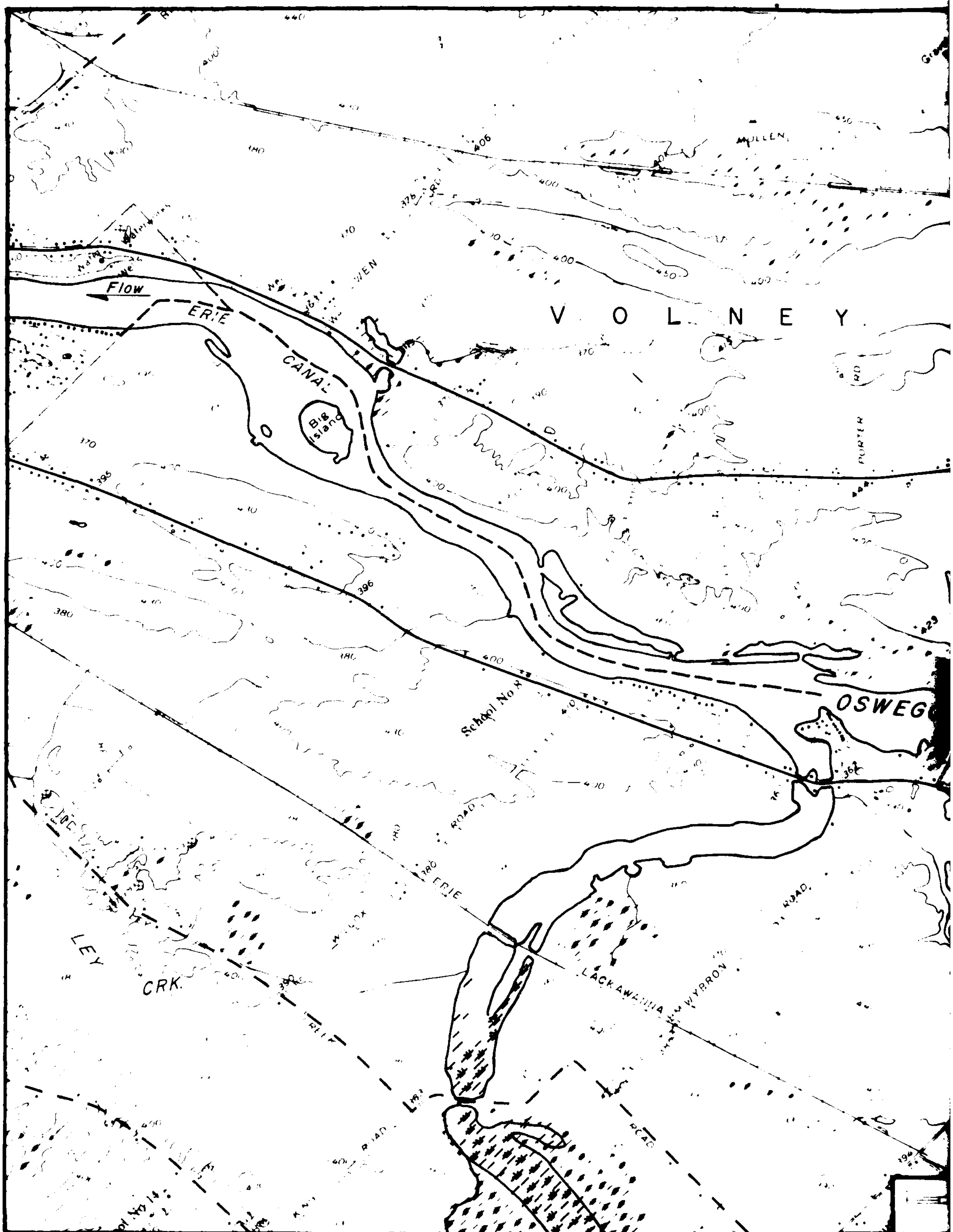
OSWEGO RIVER BASIN

FULTON

FLOODED AREAS

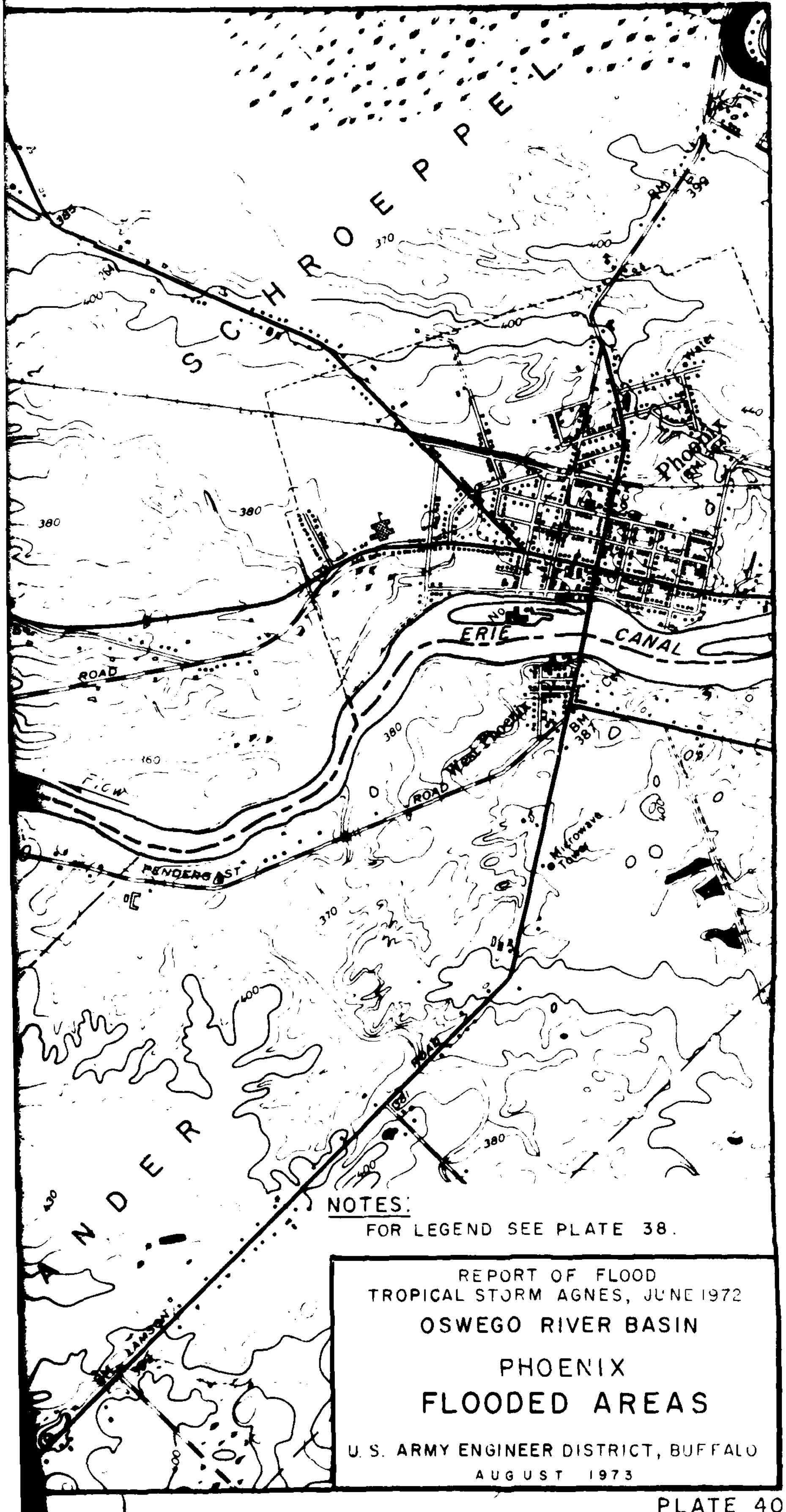
U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 39



VOLNEY
Flow
ERIE
CANAL
Big Island
OSWEG
School No 8
MULLEN
PORTER
RD
ROAD
ERIE
LACKAWANNA
LEY
CRK.
400
380
396
395

ROAD
PENN
CENTRAL
Great Bear Siding
GREAT
BEAR
ROAD
BANKRUPT
STREET
HARRIS
ROAD
PORTER
RD
Great Bear Springs
Hinmansville
Walter Island
OSWEGO
RIVER
WEGO
RIVER
GRANBY
OSWEGO CO
ONONDAGA CO
COUNTY
LINE
ROAD
Chase Cem
LYSAN
MILE
2000 FEET



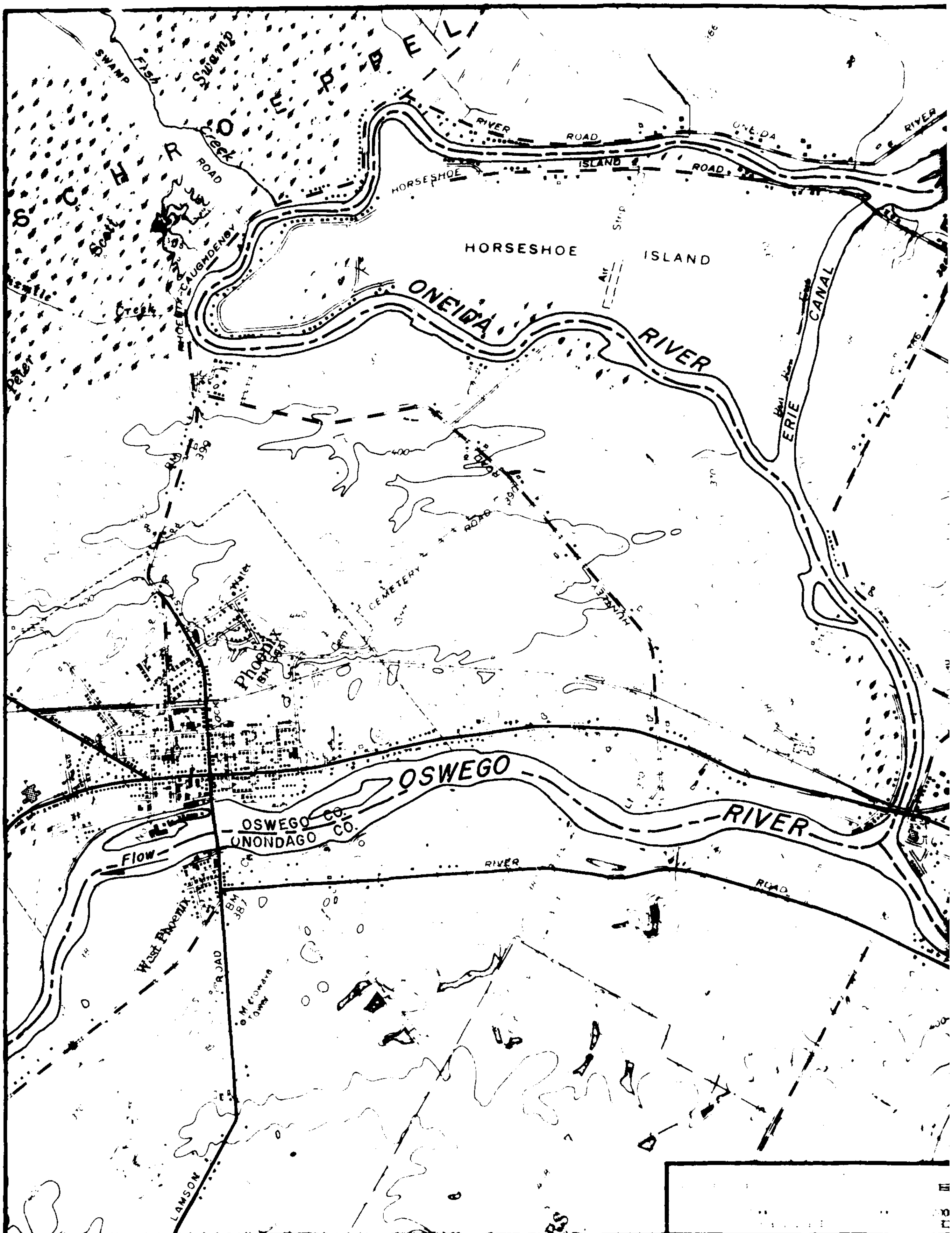
NOTES:
FOR LEGEND SEE PLATE 38.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

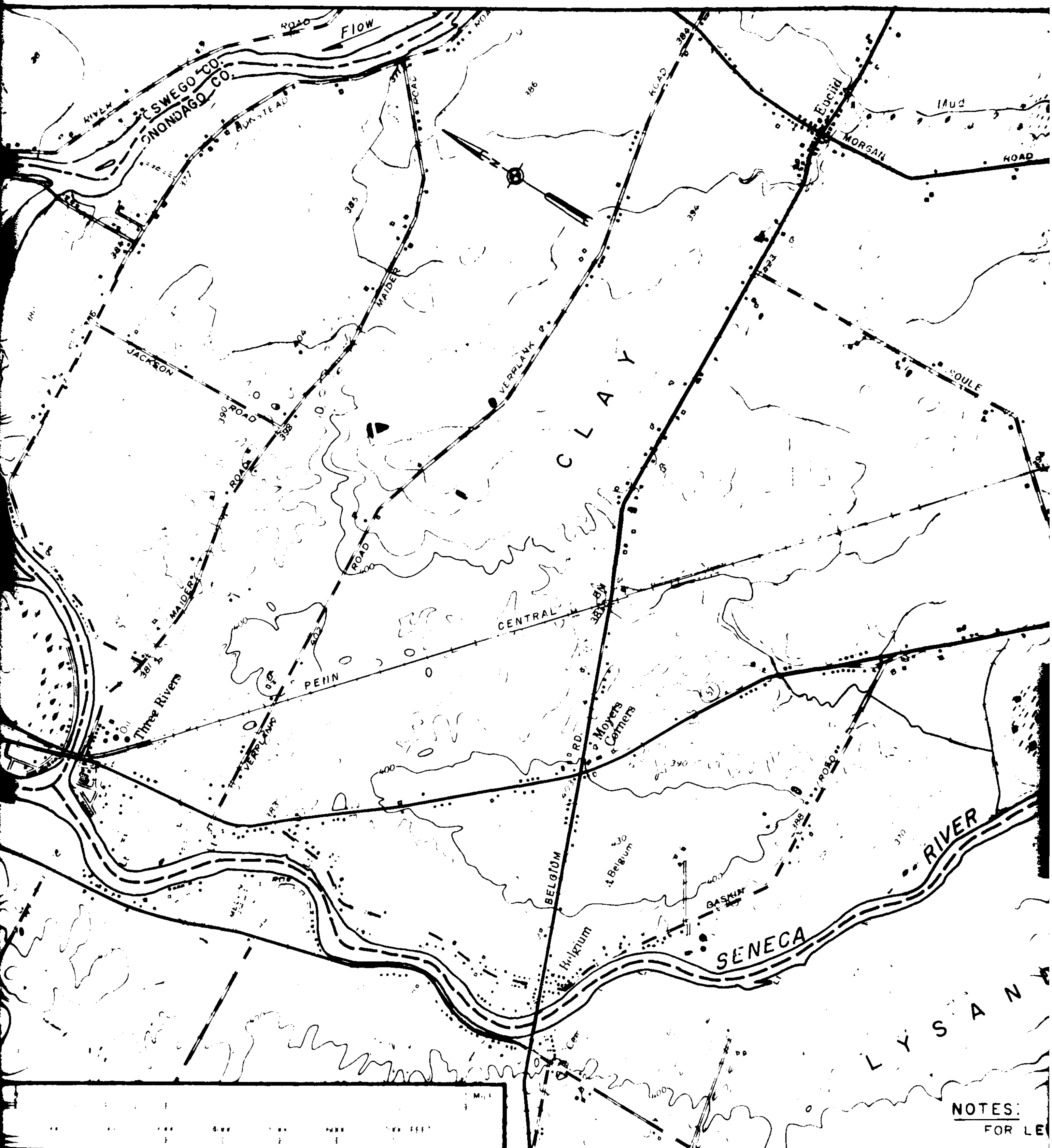
PHOENIX
FLOODED AREAS

U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

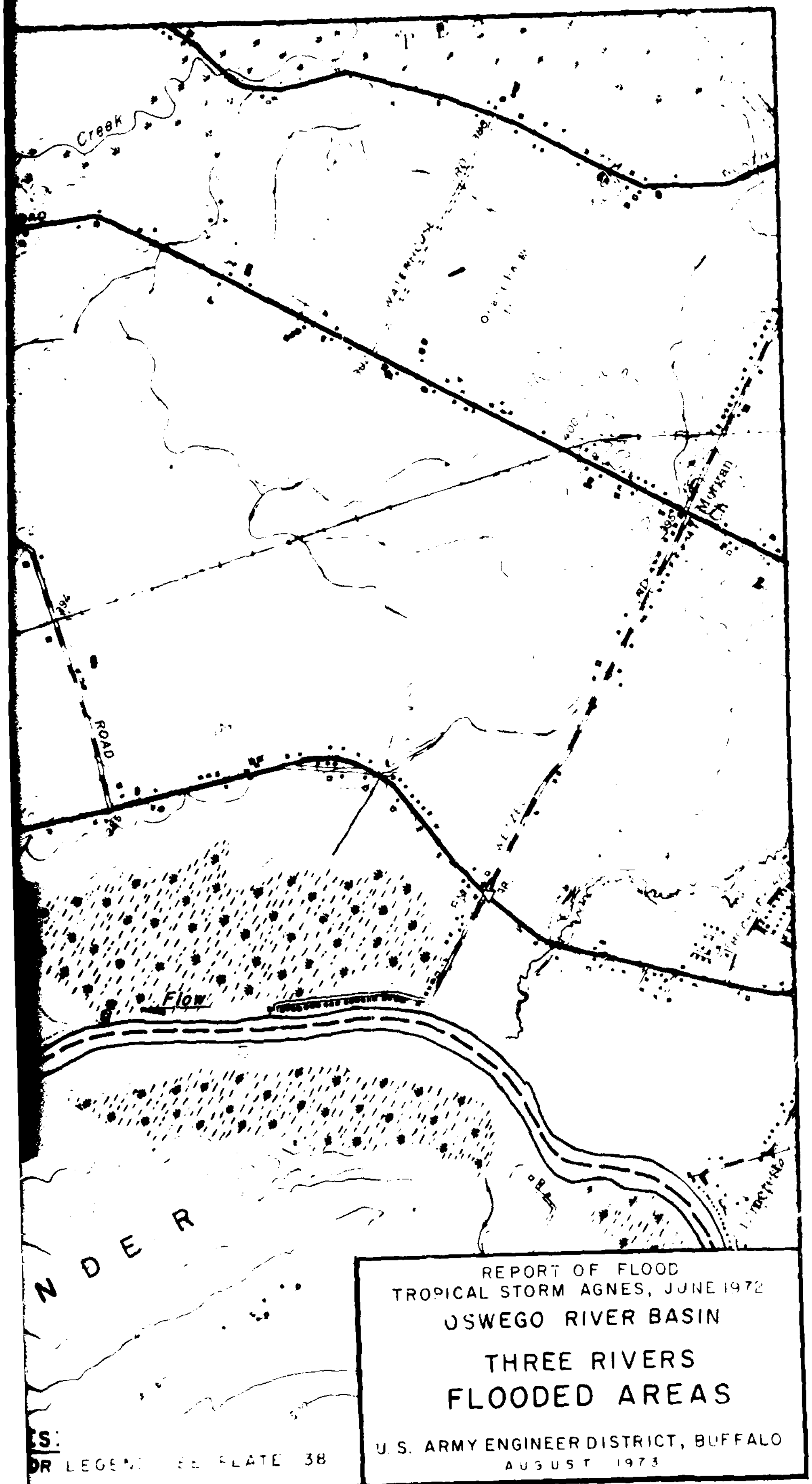
PLATE 40



SCHROEPPEL
SWAMP
Fish Creek
Swamp
ROAD
Scott
Creek
CAUGHDENOY
RIVER ROAD
ONEIDA RIVER
HORSESHOE ISLAND ROAD
HORSESHOE ISLAND
ONEIDA RIVER
ERIE CANAL
CEMETERY ROAD
HUNTLEY
Phoenix
OSWEGO RIVER
OSWEGO CO.
ONONDAGO CO.
Flow
RIVER ROAD
West Phoenix
BM 387
LAMSON



Flow
ROAD
RIVER
OSWEGO CO.
ONONDAGO CO.
MAIDER
JACKSON
ROAD
VERPLANK
CLAY
Euclid
MORGAN
ROAD
Mud
SOULE
CENTRAL
PENN
Three Rivers
Moyers Corners
RD.
BELGIUM
Belgium
GASKIN
SENECA
RIVER
NOTES:

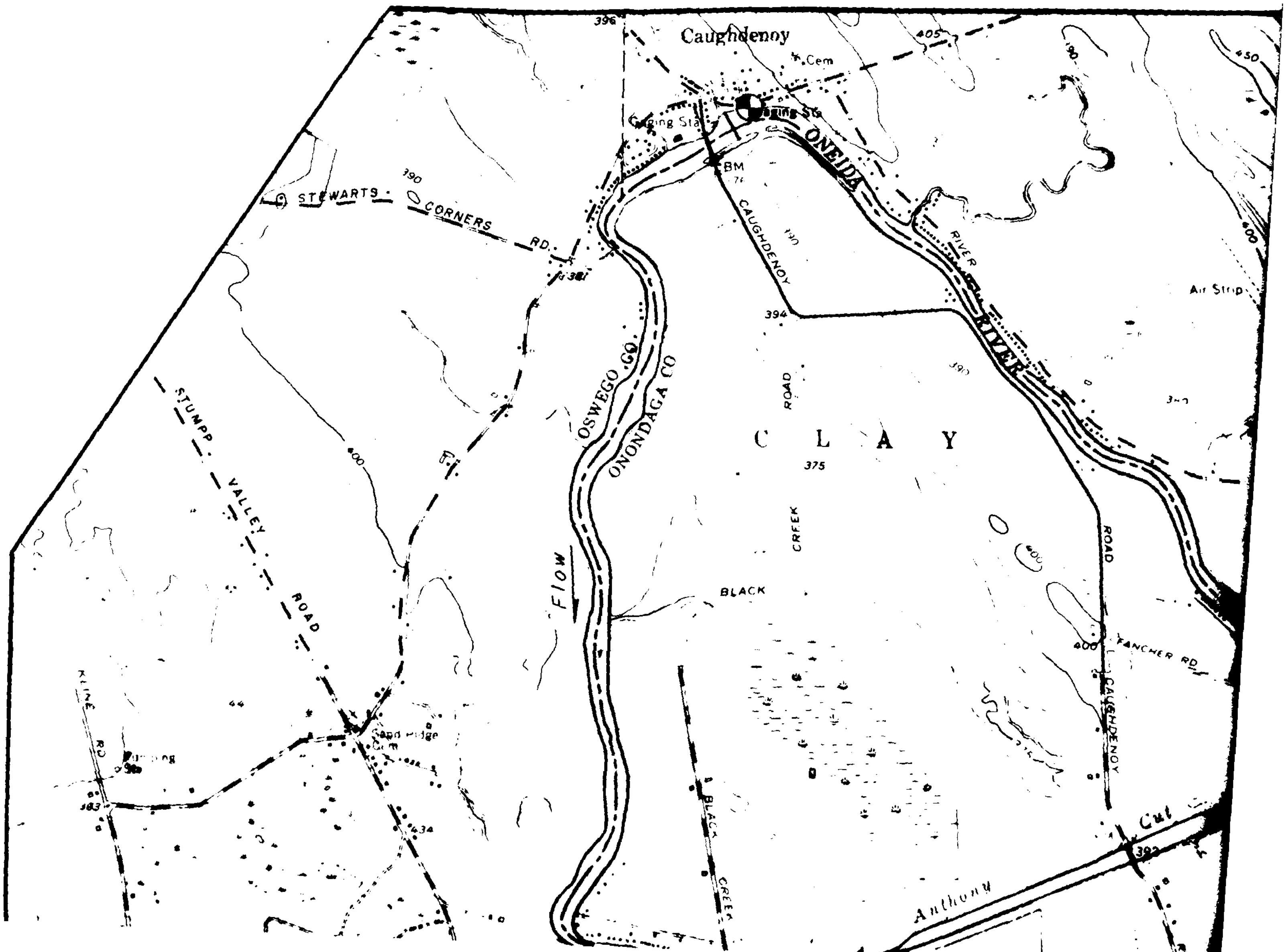


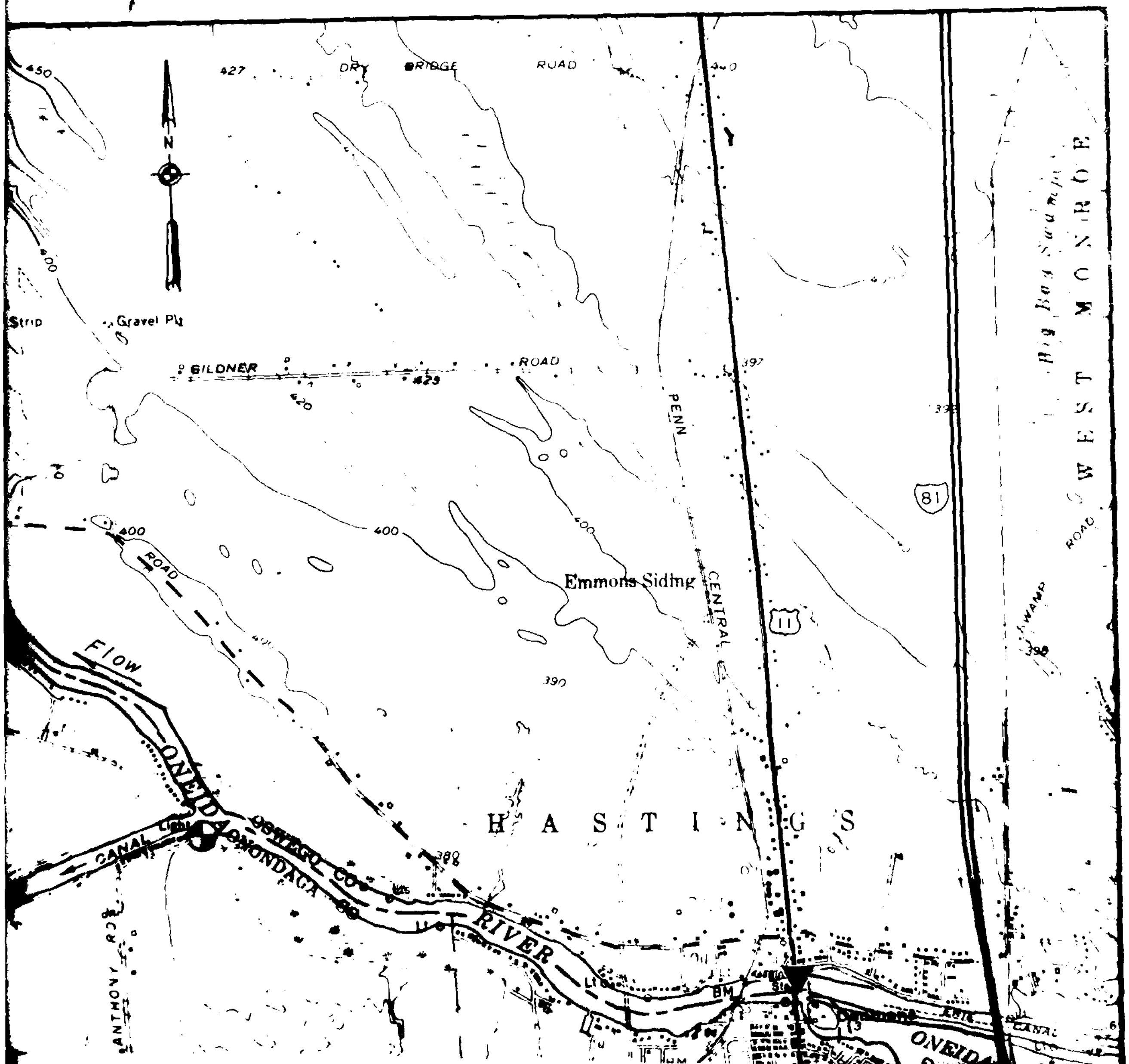
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

THREE RIVERS
FLOODED AREAS

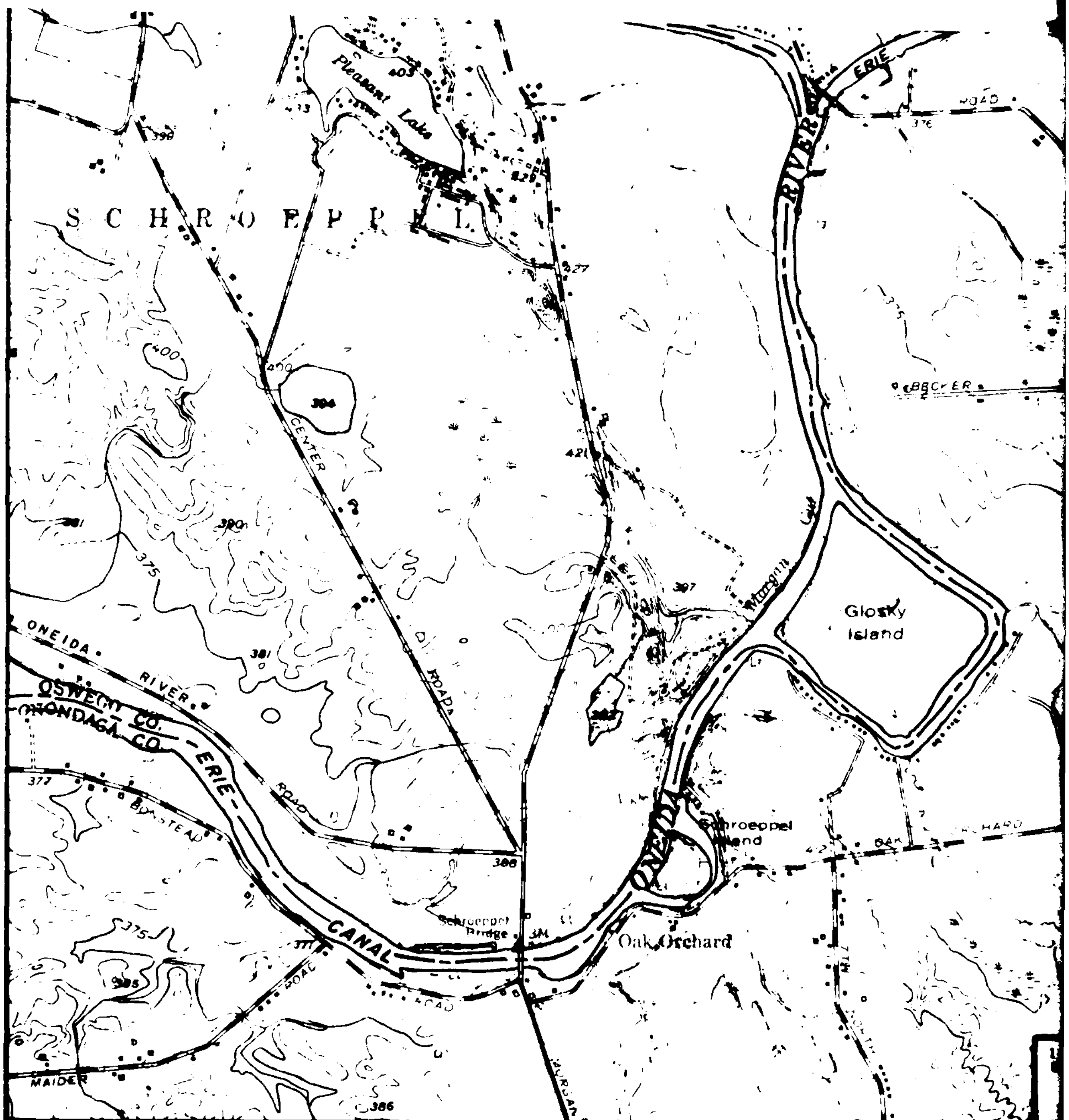
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 41

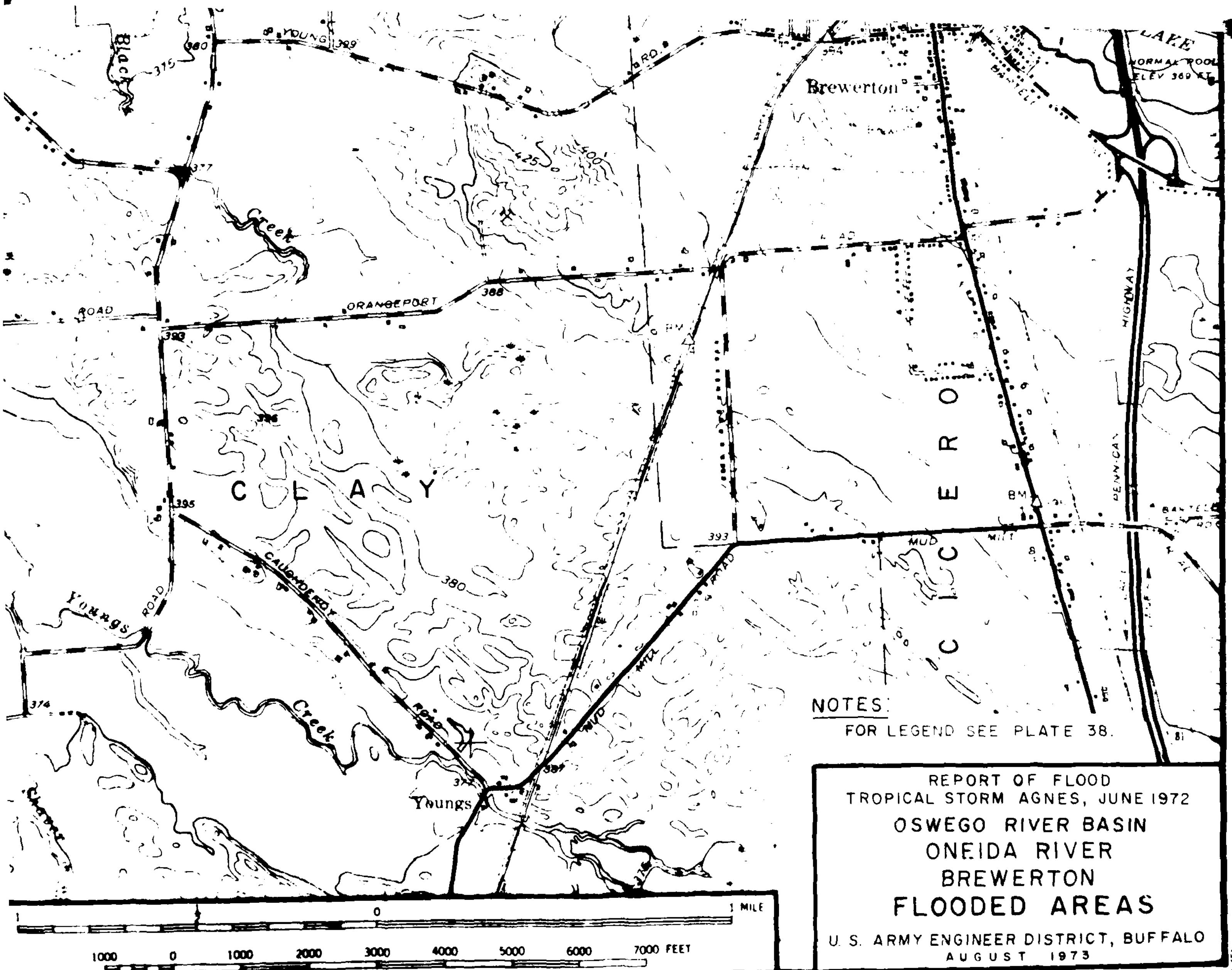

Caughdenoy
Cem
Gaging Sta
BM
ONEIDA
RIVER
STEWARTS
CORNERS
RD.
CAUGHDENOY
Air Strip
OSWEGO CO
ONONDAGA CO
ROAD
C L A Y
STUMPP
VALLEY
ROAD
CREEK
BLACK
FLOW
ROAD
FANCHER RD
CAUGHDENOY
KLINE
RD
Sand Ridge
Cut
Anthony
BLACK
CREEK
396
405
450
390
394
375
400
383
434



DRY BRIDGE ROAD
N
Strip
Gravel Pit
GILDNER
ROAD
PENN
CENTRAL
Emmons Siding
WEST MONROE
Big Bay Swamp
ROAD
SWAMP
FLOW
ONEIDA
CANAL
OSWEGO CO
ONONDAGA CO
RIVER
HASTINGS
ANTHONY RD
ERIE CANAL
81
11
450
427
440
400
397
420
425
390
380

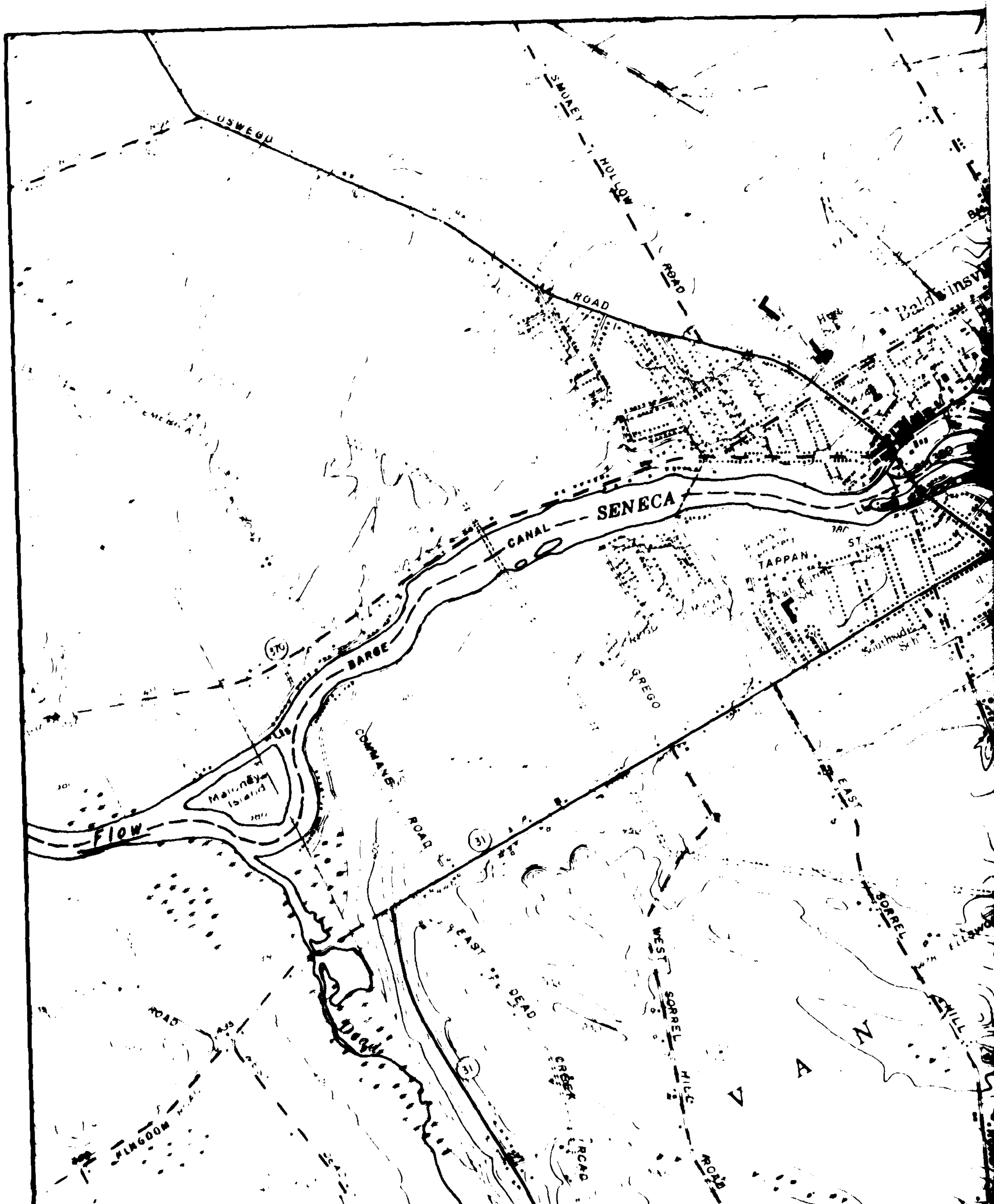


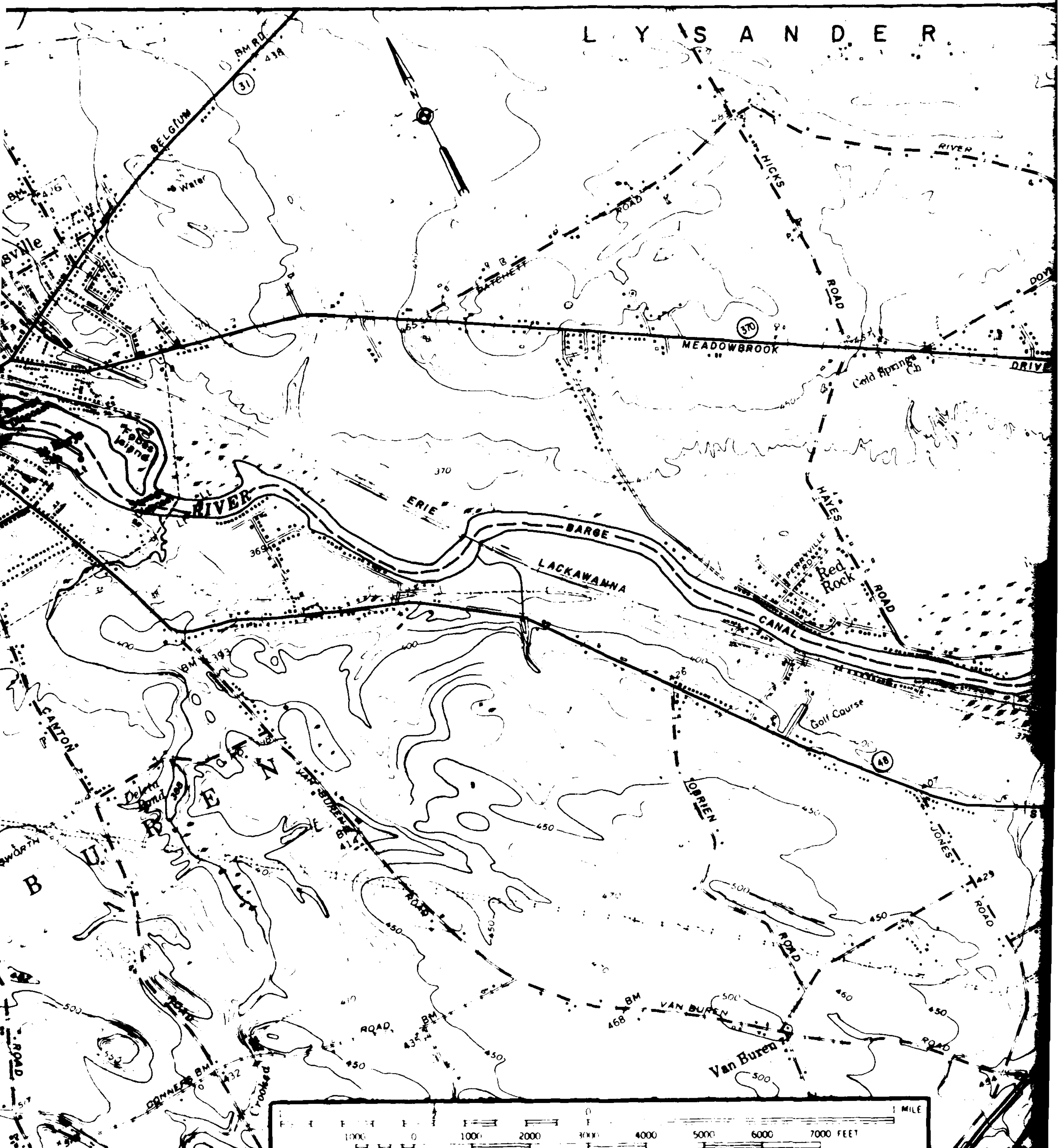
SCHROEPPEL
Pleasant Lake
403
390
427
400
394
CENTER ROAD
421
381
390
375
ONEIDA RIVER ROAD
OSWEGO CO.
ONONDAGA CO.
ERIE CANAL
377
388
Schroeppel Bridge
Oak Orchard
ONEIDA RIVER
ERIE
Schroeppel Island
Glosky Island
397
BECKER
ROAD
MAIDEN
386



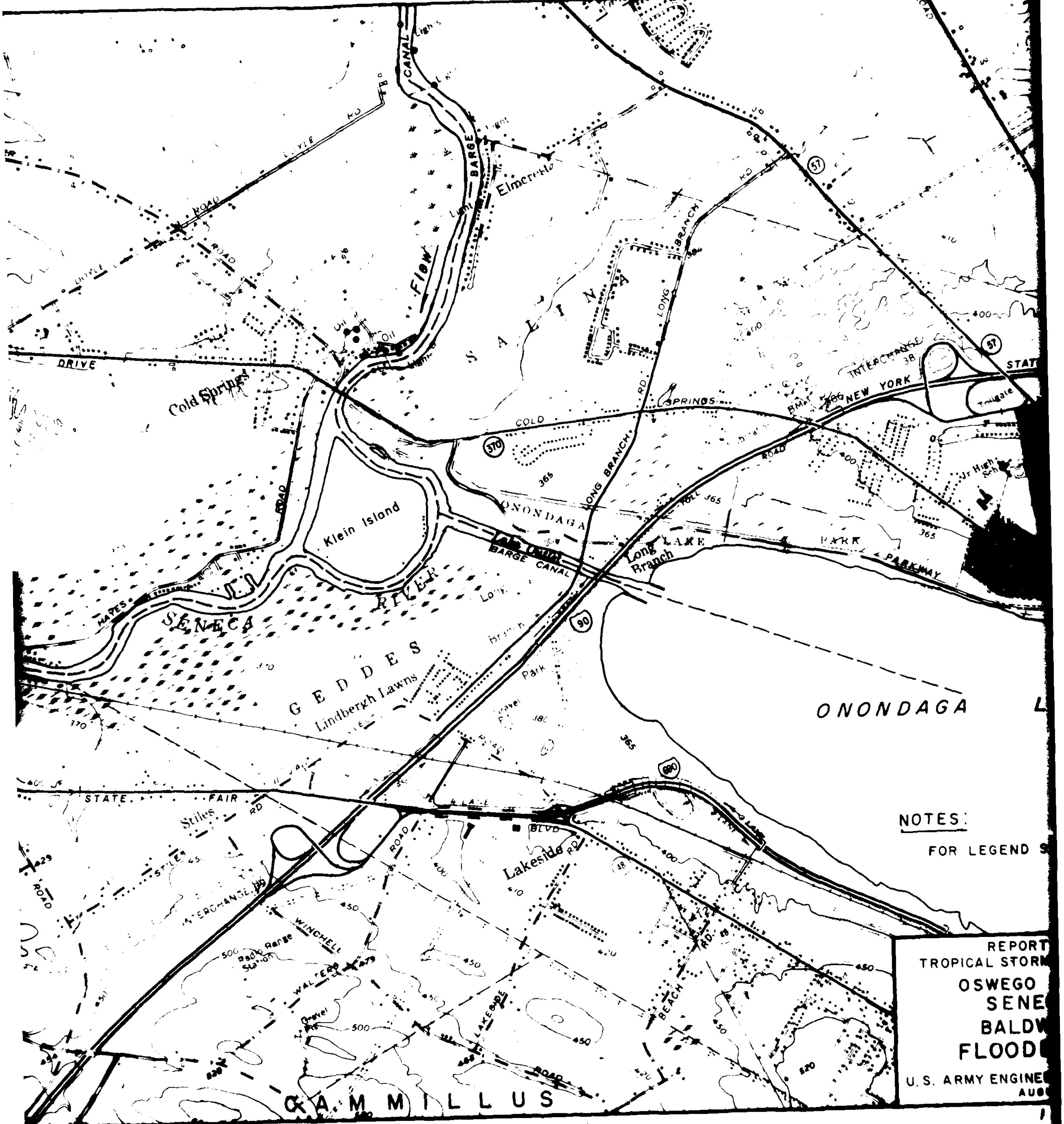
NOTES:
FOR LEGEND SEE PLATE 38.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
ONEIDA RIVER
BREWERTON
FLOODED AREAS
U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973


OSWEGO
ROAD
HOLLOW
ROAD
SENECA
CANAL
BARGE
370
Flow
TAPPAN
ST
GREGO
COMMANS
ROAD
31
EAST
SORREL
WEST
SORREL
HILL
ROAD
EAST
DEAD
CREEK
ROAD
V
A
N
KINGDOM



L Y S A N D E R
BELGIUM
BM RD
438
31
Water
HICKS
ROAD
RIVER
PATCHETT
ROAD
370
MEADOWBROOK
DRIVE
Cold Springs Cr
RIVER
ERIE
BARGE
CANAL
LACKAWANNA
HAYES
ROAD
Red Rock
369
393
CANTON
VAN BUREN
ROAD
B U R E N
OBRIEN
ROAD
Golf Course
48
JONES
ROAD
429
400
450
500
VAN BUREN
ROAD
468
Van Buren
432
434
Crooked
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET



BARGE CANAL
FLOW
Elmcrest
SALINA
DOYLE RD
DOYLE ROAD
ROAD
DRIVE
Cold Springs
COLD SPRINGS ROAD
LONG BRANCH RD
NEW YORK STATE
INTERCHANGE 38
Tollgate
Jr High Sch
Klein Island
ONONDAGA LAKE PARKWAY
ONONDAGA
BARGE CANAL
Long Branch
SENECA RIVER
HAYES
GEDDES
Lindbergh Lawns
Park
ONONDAGA
NOTES:
FOR LEGEND S
STATE FAIR RD
Stiles
BLVD
Lakeside RD
INTERCHANGE
WINCHELL
Radio Range Station
WALTERS
LAKESIDE ROAD
BEACH RD
CAMMILLUS
REPORT
TROPICAL STORM
OSWEGO
SENE
BALDW
FLOOD
U.S. ARMY ENGINE
AUG

REPORT OF FLOOD
AL STORM AGNES, JUNE 1972

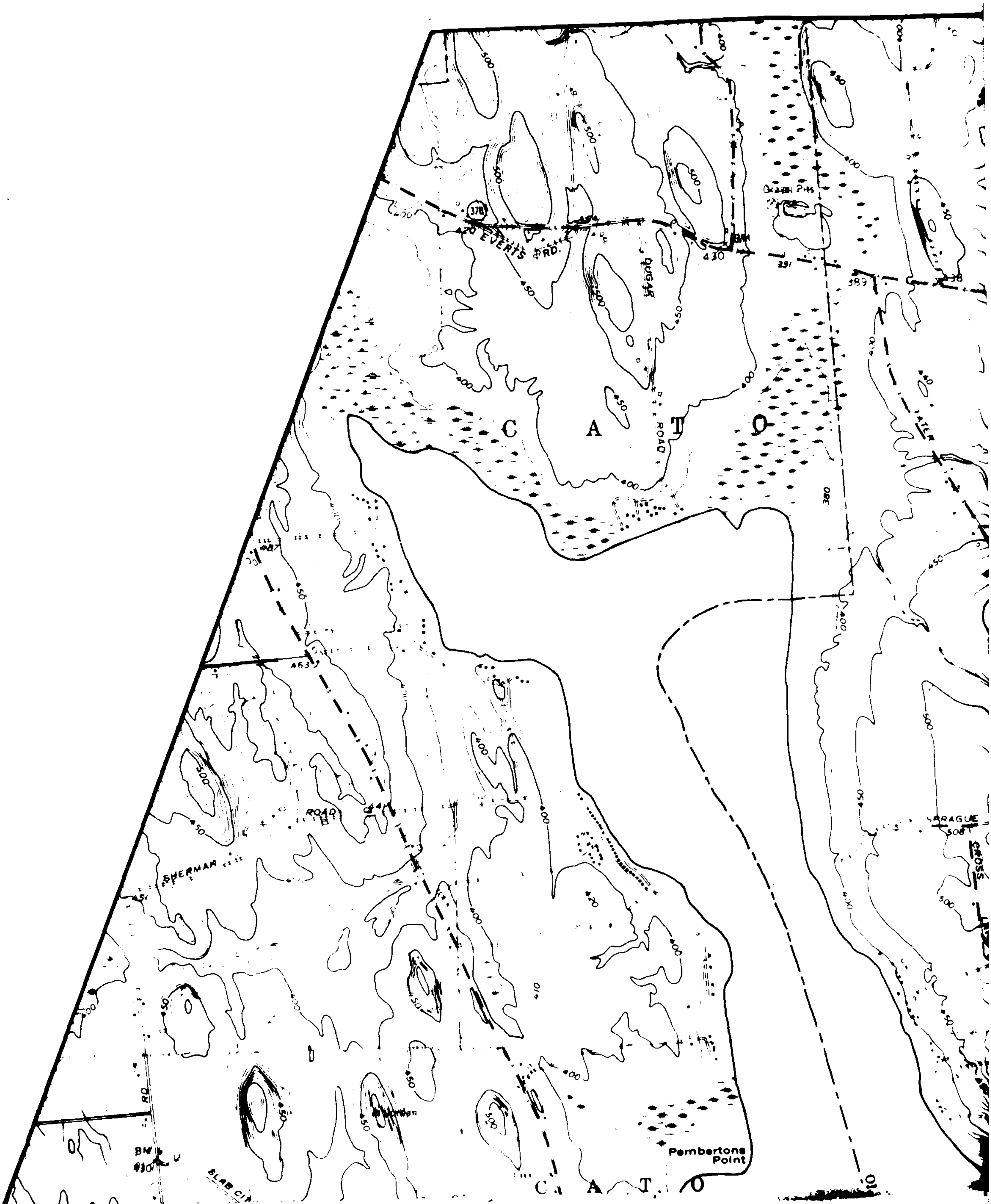
SWEGO RIVER BASIN

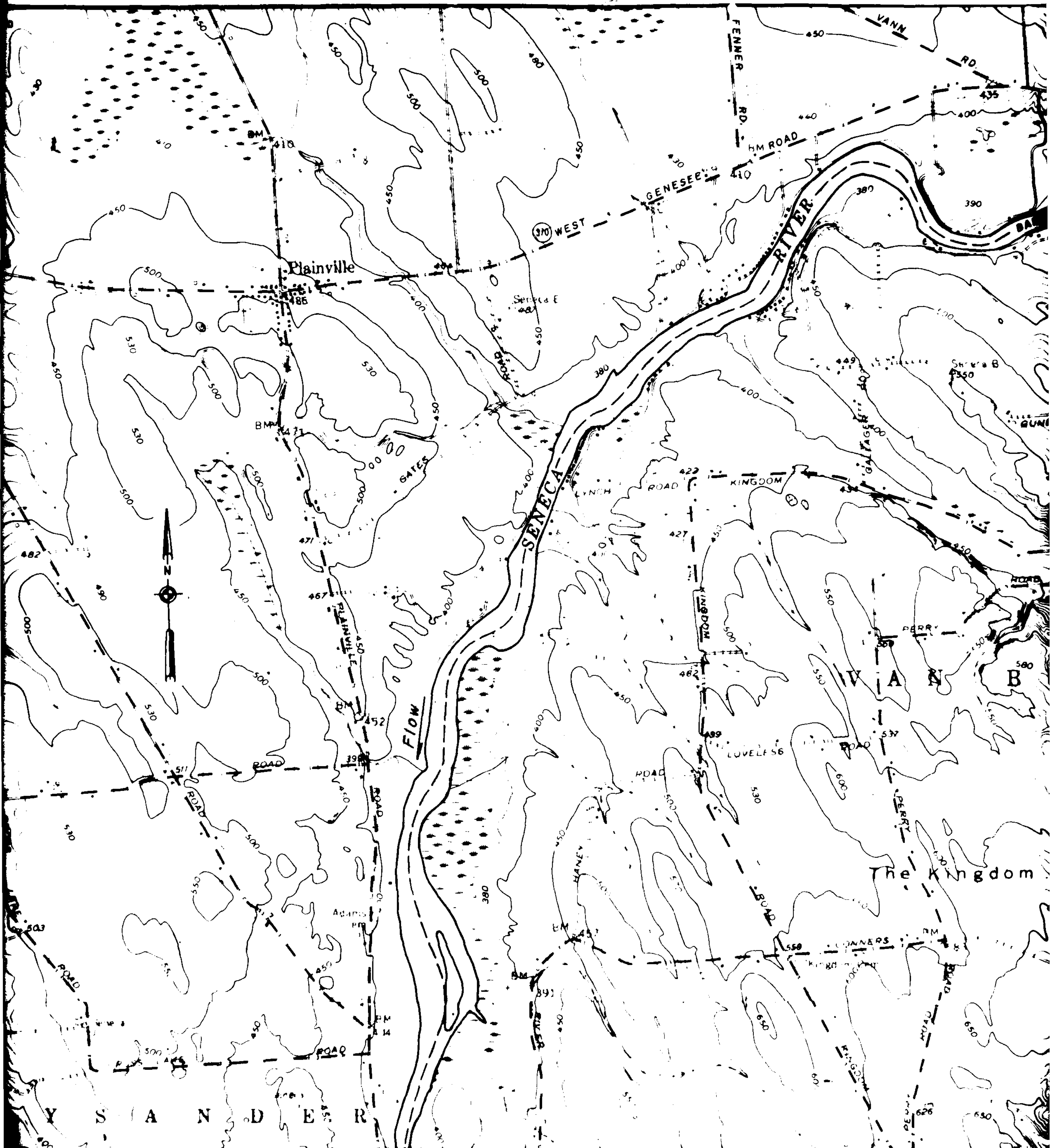
SENECA RIVER

BALDWINSVILLE

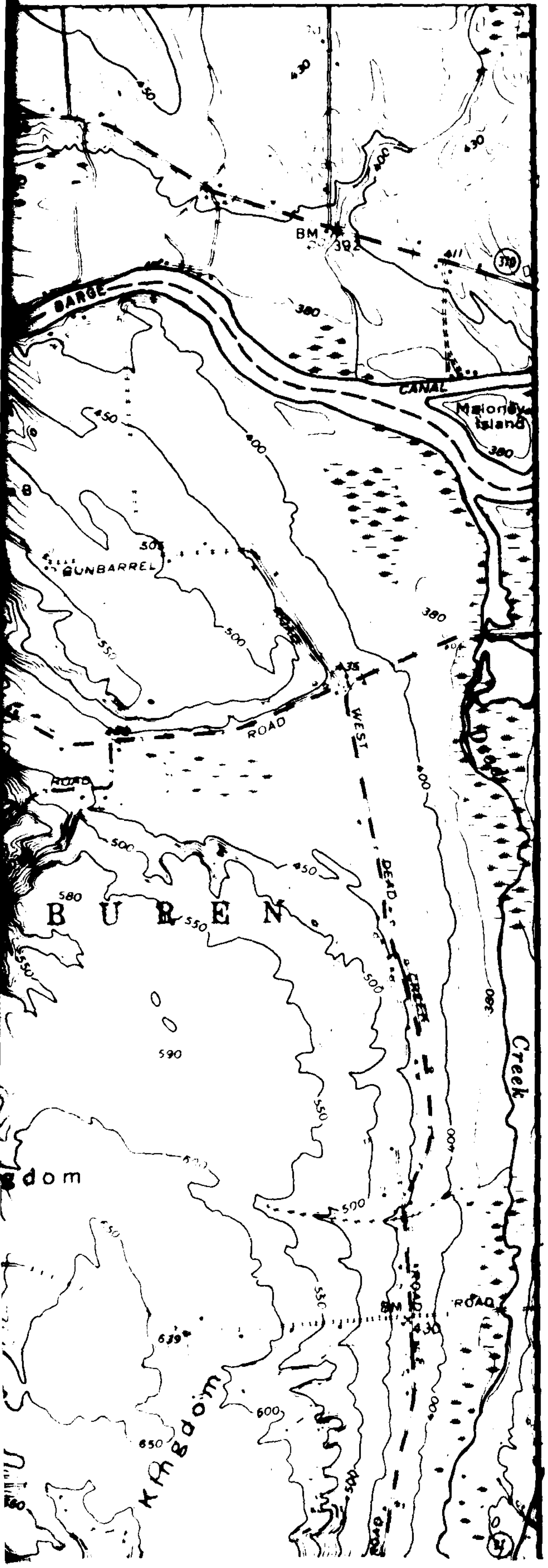
LOODED AREAS

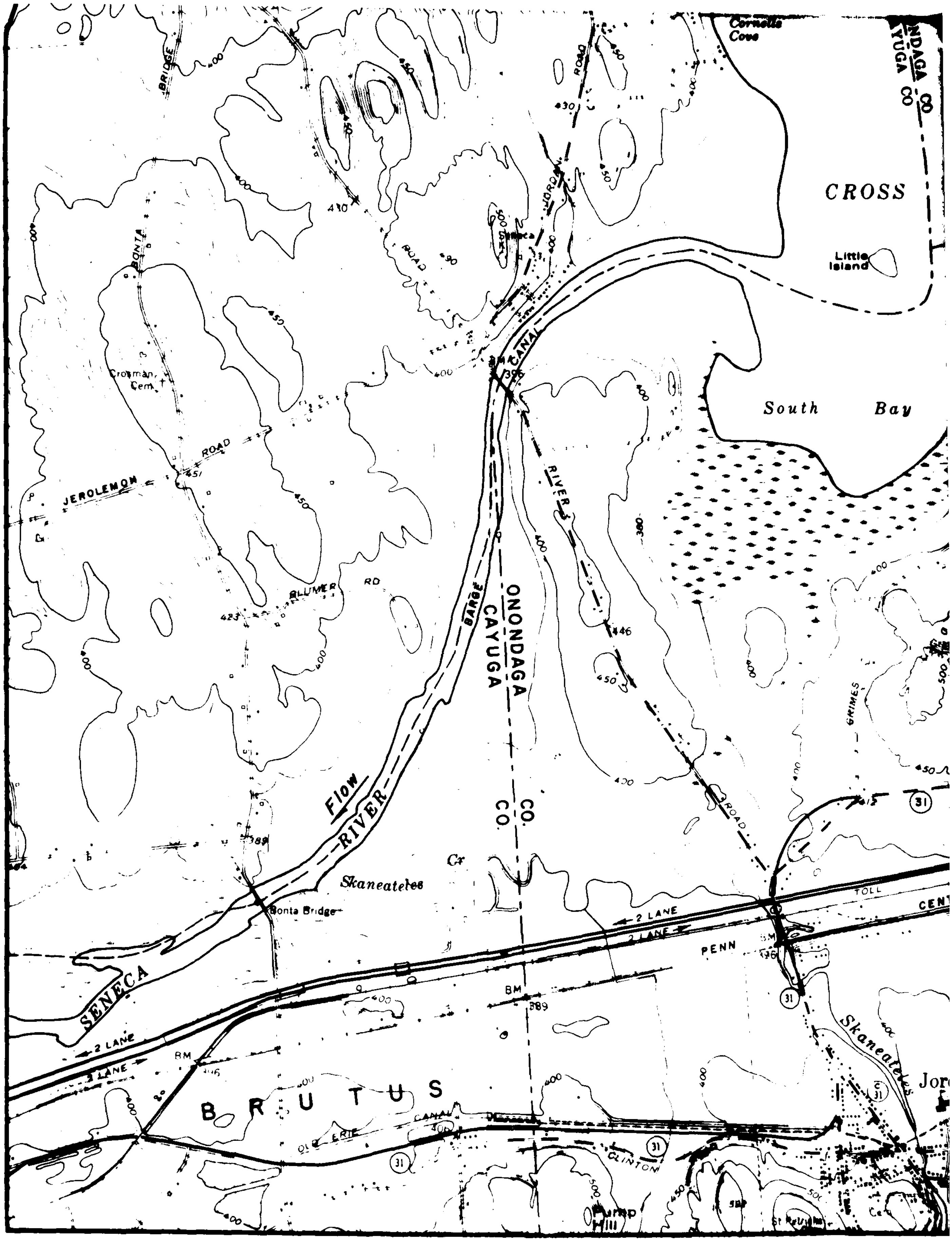
Y ENGINEER DISTRICT, BUFFALO
AUGUST 1973


EVERTS RD.
DUGAR
C A T O
ROAD
SHERMAN
ROAD
SPRAGUE
CROSS
Pembertons
Point
C A T O

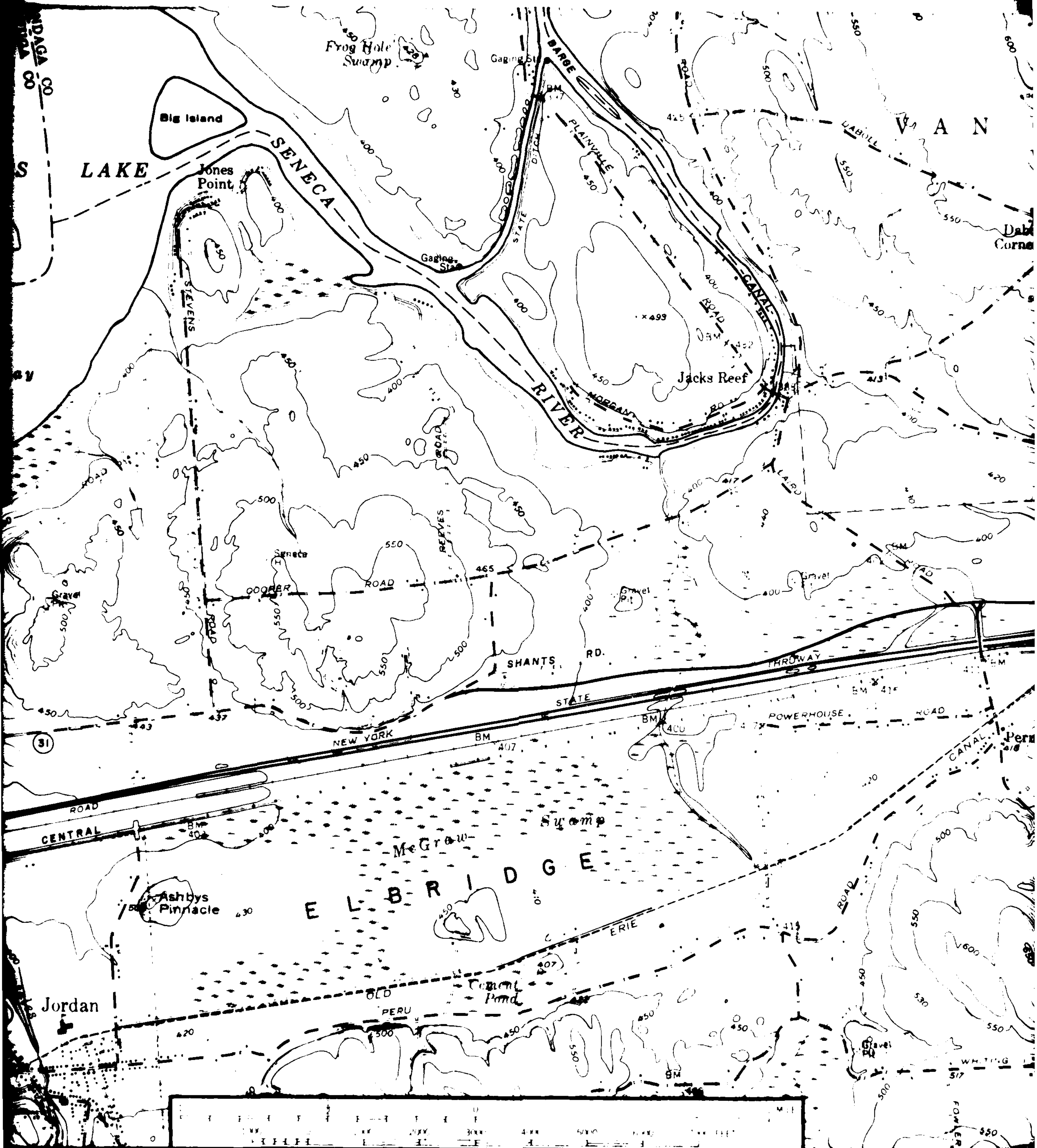


Plainville
SENECA
RIVER
FLOW
WEST GENESEE ROAD
FENNER RD.
VANN RD
GATES
LYNCH ROAD
KINGDOM
PLAINVILLE
LOVELESS ROAD
PERRY
CONNERS
The Kingdom
V A N B
Y S A N D E R
N

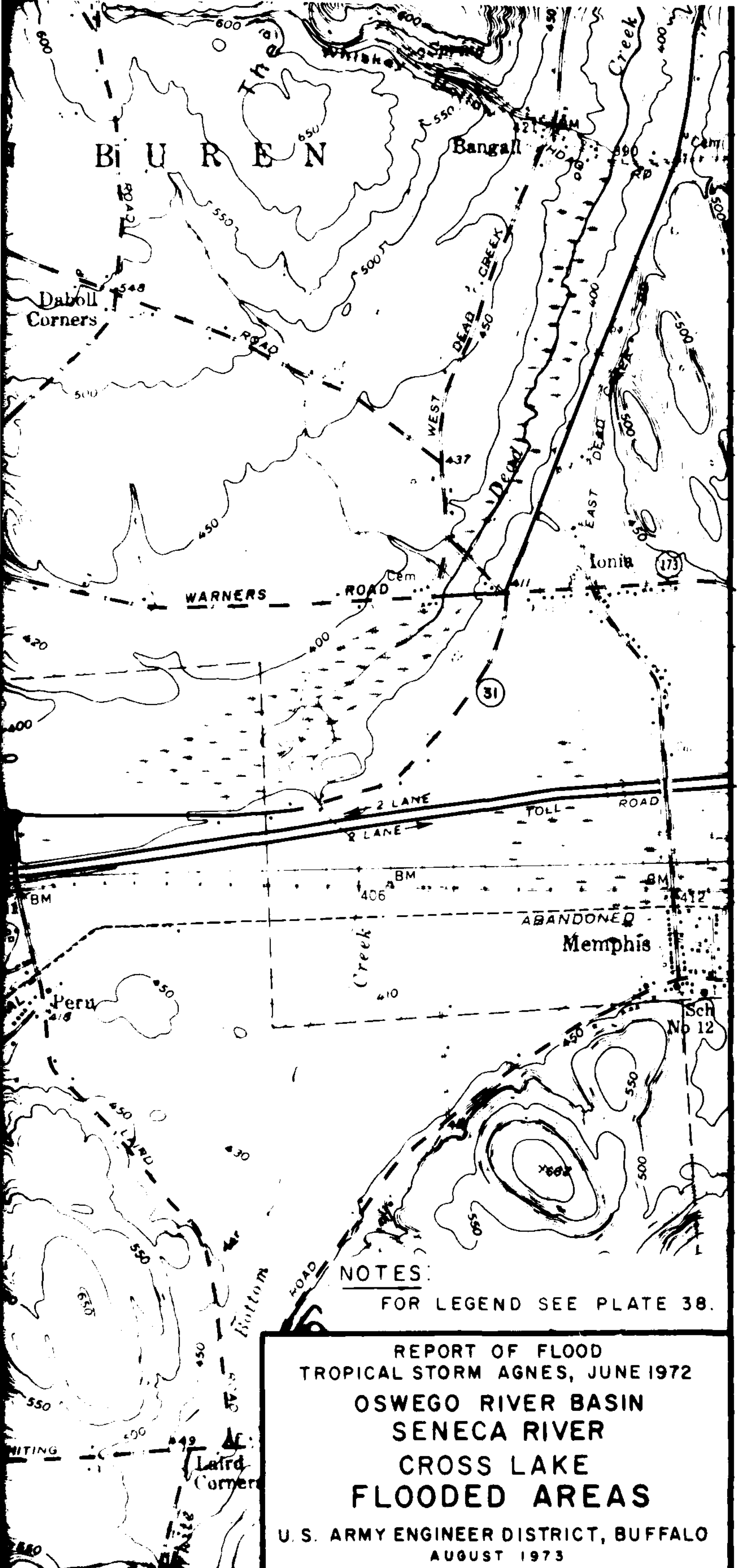

BARGE
CANAL
Maloney Island
BM 392
GUNBARREL
ROAD
WEST
DEAD
CREEK
B U R E N
Creek
BM 430
ROAD



Cornells Cove
ONONDAGA CO
CAYUGA CO
CROSS
Little Island
South Bay
BRIDGE
ROAD
JORDAN
BONTA
Seneca
Crossman Cem
ROAD
JEROLEMON
BLUMER RD
CANAL
BARGE
RIVER
ONONDAGA
CAYUGA
RIVER
ROAD
GRIMES
Flow
RIVER
SENECA
Skaneateles
Cr
Bonta Bridge
ONONDAGA CO.
CAYUGA CO.
2 LANE
TOLL
2 LANE
PENN
CENT
BM
389
BM
2 LANE
2 LANE
BRUTUS
OLD ERIE CANAL
CLINTON
Skaneateles
Jor
31

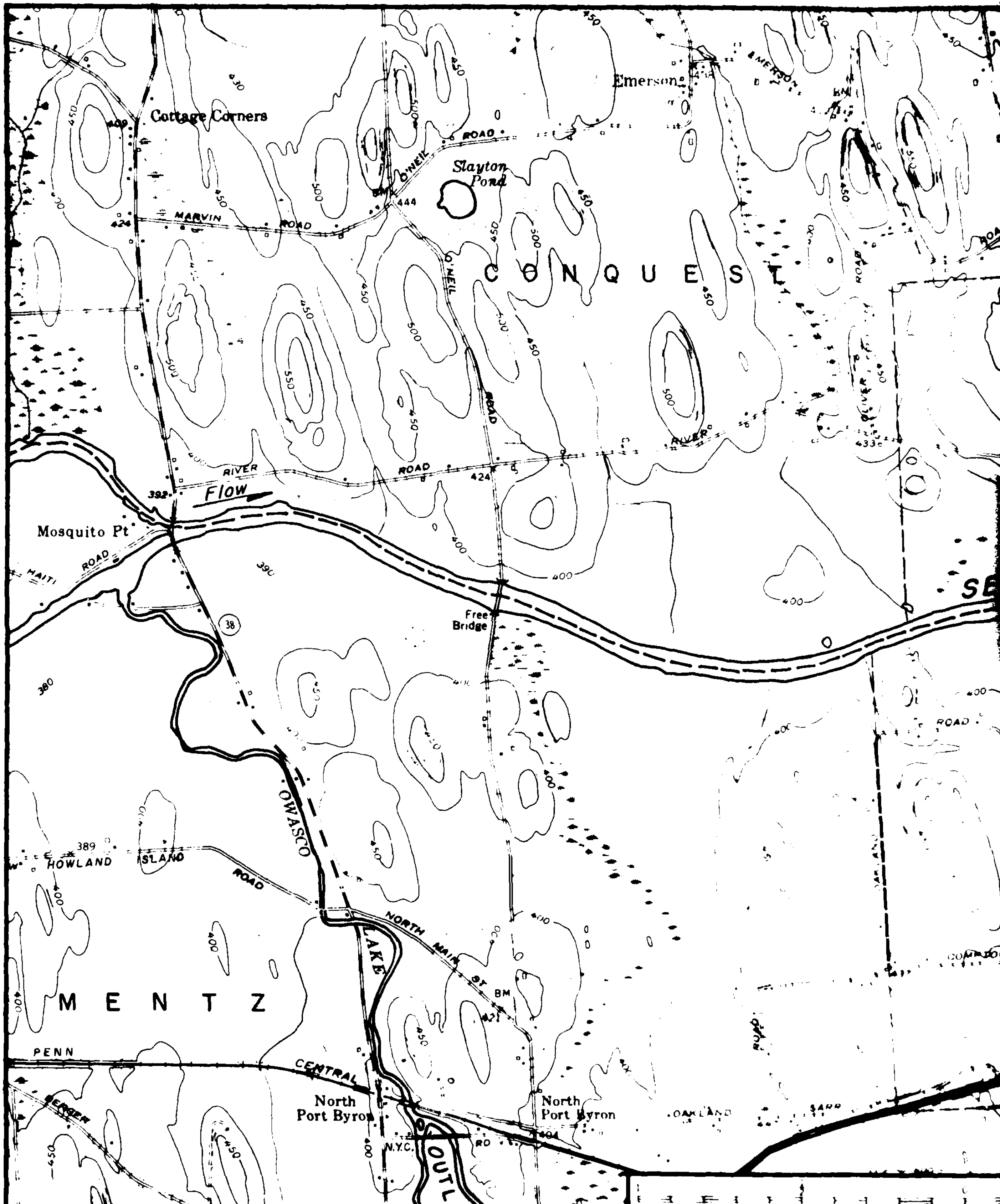


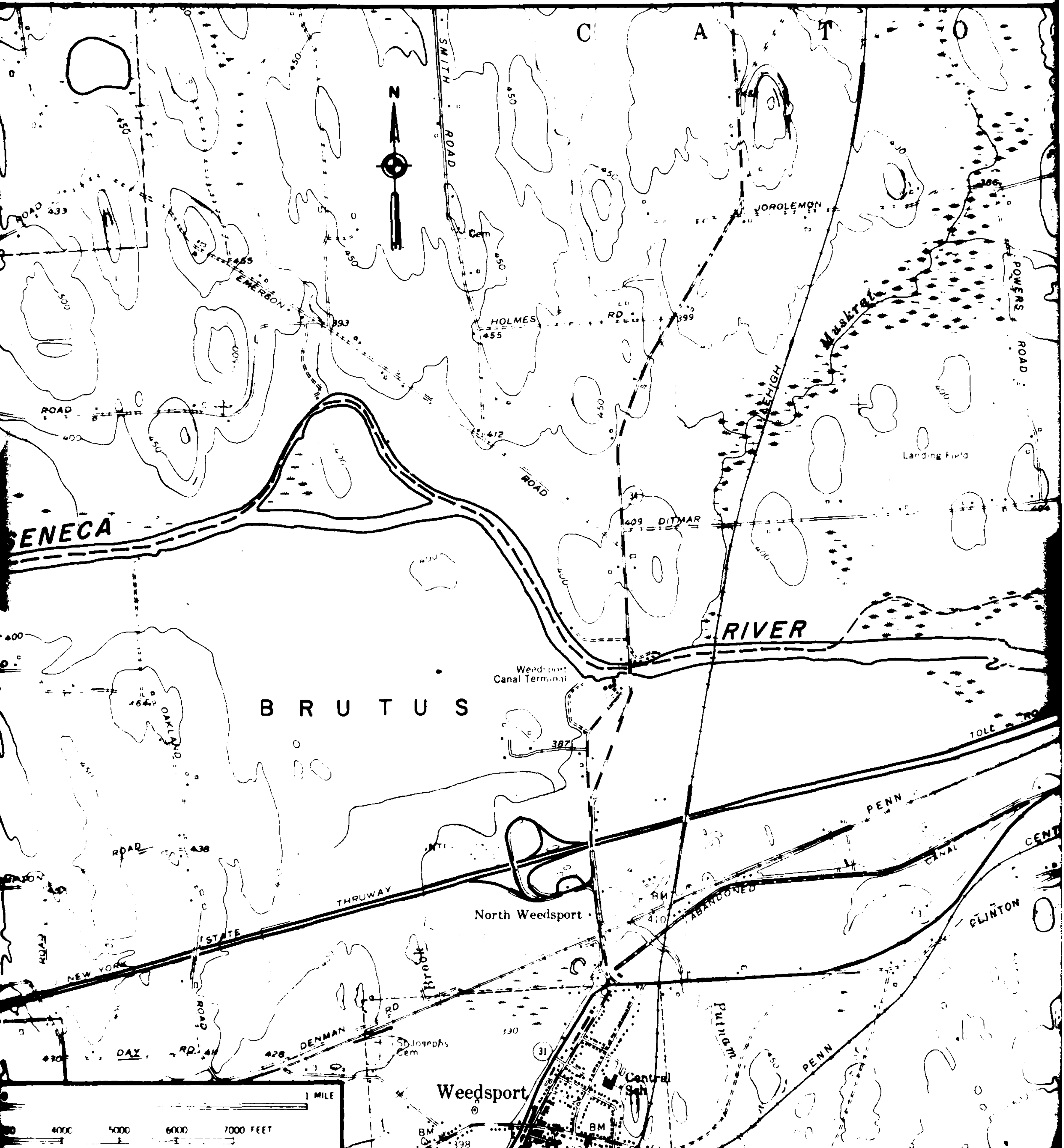
Frog Hole Swamp
Big Island
LAKE
Jones Point
SENECA RIVER
BARGE CANAL
PLAINVILLE ROAD
STATE DITCH
MORGAN RD
Jacks Reef
DABOLL
VAN
STEVENS ROAD
COOPER ROAD
REEVES ROAD
Seneca
SHANTS RD.
THRUWAY
NEW YORK STATE
CENTRAL ROAD
POWERHOUSE ROAD
McGrow Swamp
ELBRIDGE
Ashbys Pinnacle
ERIE CANAL
Cement Pond
OLD PERU
Jordan
LAIRD



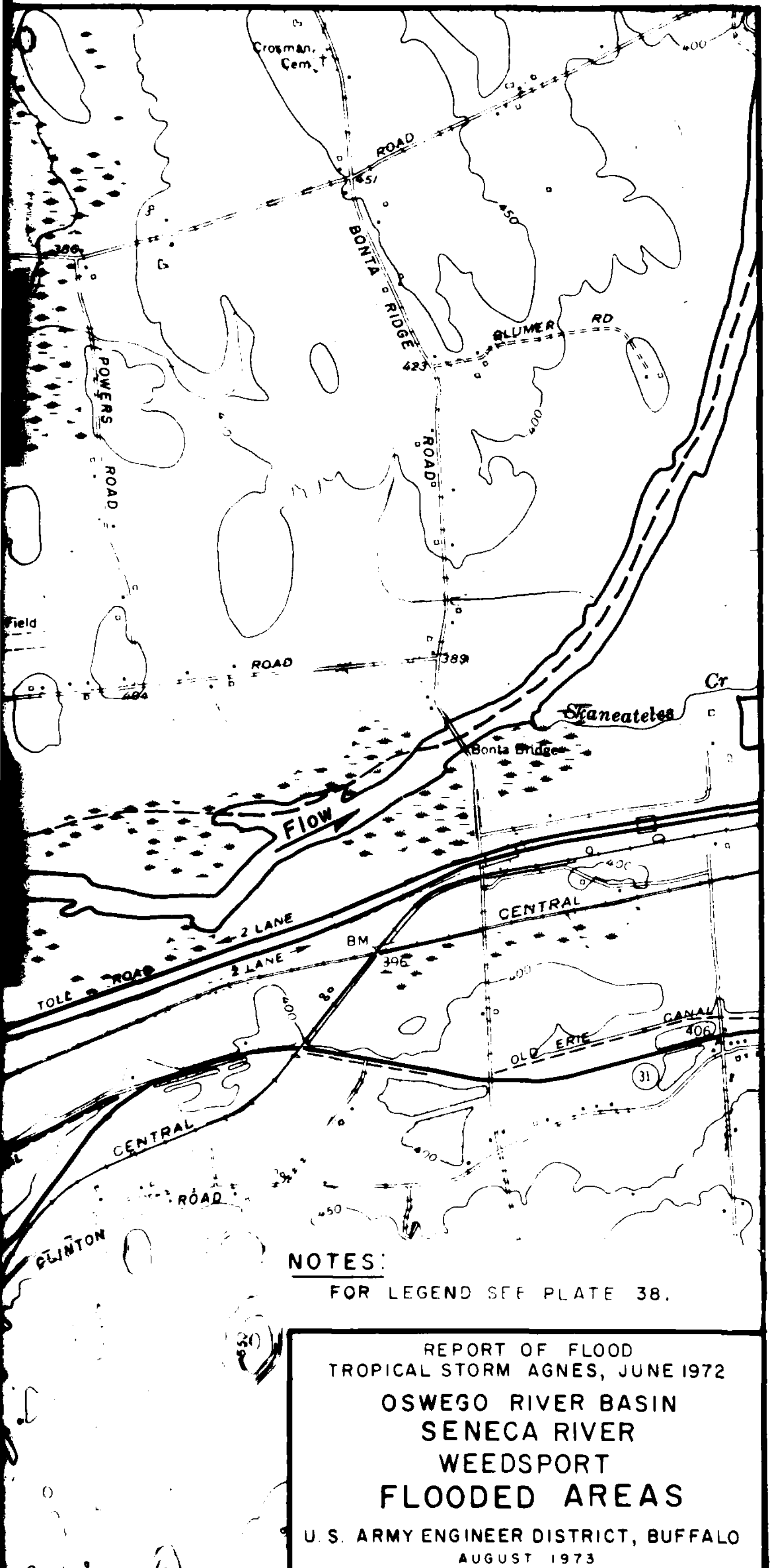
NOTES:
FOR LEGEND SEE PLATE 38.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
SENECA RIVER
CROSS LAKE
FLOODED AREAS
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973


Cottage Corners
Emerson
EMERSON
O'NEIL ROAD
Slayton Pond
MARVIN ROAD
C O N Q U E S T
O'NEIL ROAD
RIVER ROAD
OLIVER
Flow
Mosquito Pt
HAITI ROAD
38
Free Bridge
HOWLAND ISLAND ROAD
OWASCO
LAKE
NORTH MAIN ST
M E N T Z
PENN CENTRAL
North Port Byron
North Port Byron
N.Y.C.
OUTLET
OAKLAND
ROAD
COMPTON
1000 0 1000 2000 4000



C A T O
N
SMITH ROAD
HOLMES RD
EMERSON
DITMAR
POWERS ROAD
Muskrat
LEHIGH
Cem
Landing Field
SENECA
RIVER
Weedsport Canal Terminal
B R U T U S
OAKLAND
ROAD
TOLL
NEW YORK STATE THRUWAY
PENN
CANAL
ABANDONED
CLINTON
North Weedsport
Brook
DENMAN RD
DAY RD
St Josephs Cem
Putnam
Weedsport
Central Sch
BM
1 MILE
4000 5000 6000 7000 FEET



NOTES:

FOR LEGEND SEE PLATE 38.

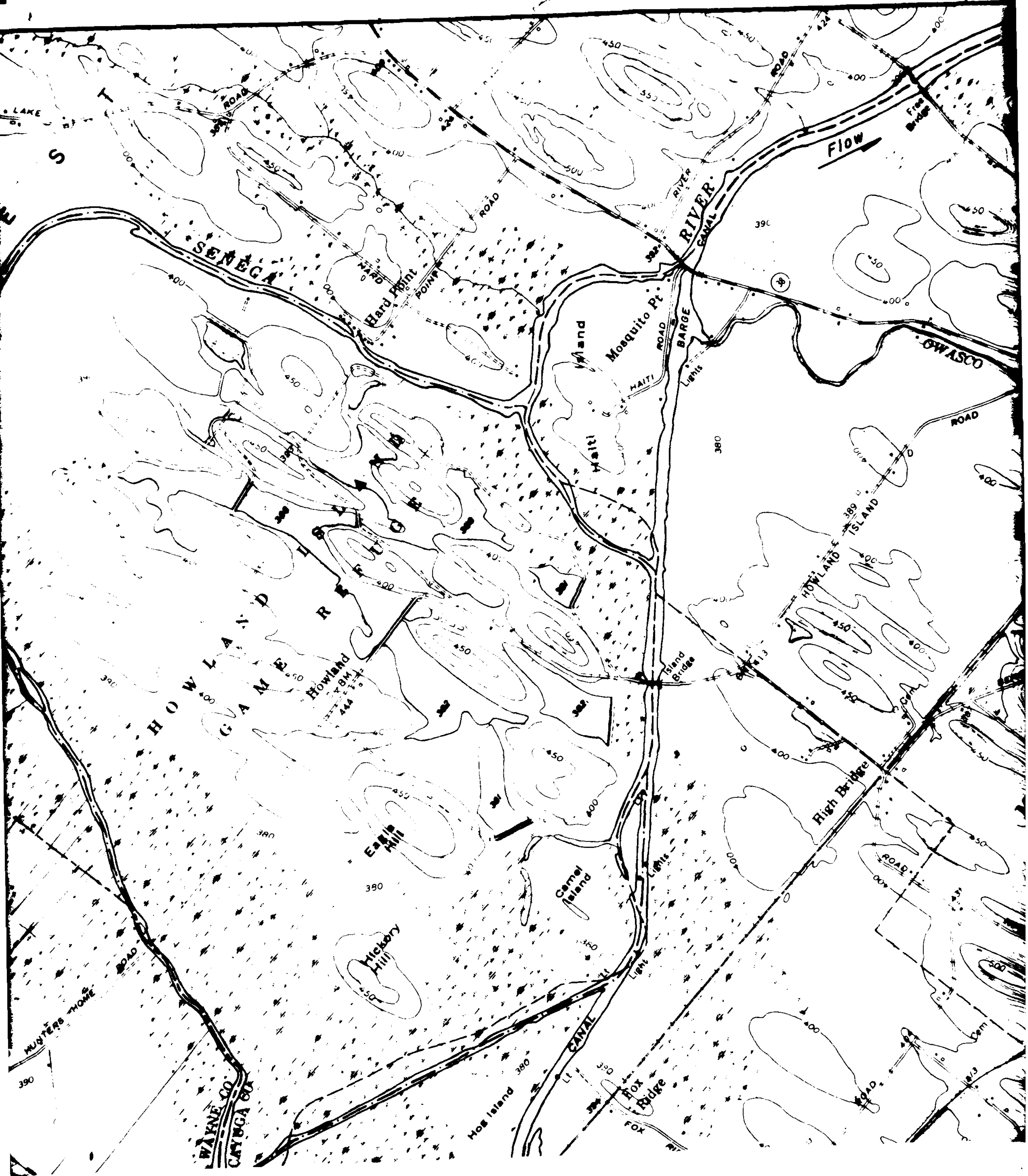
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN
SENECA RIVER
WEEDSPORT

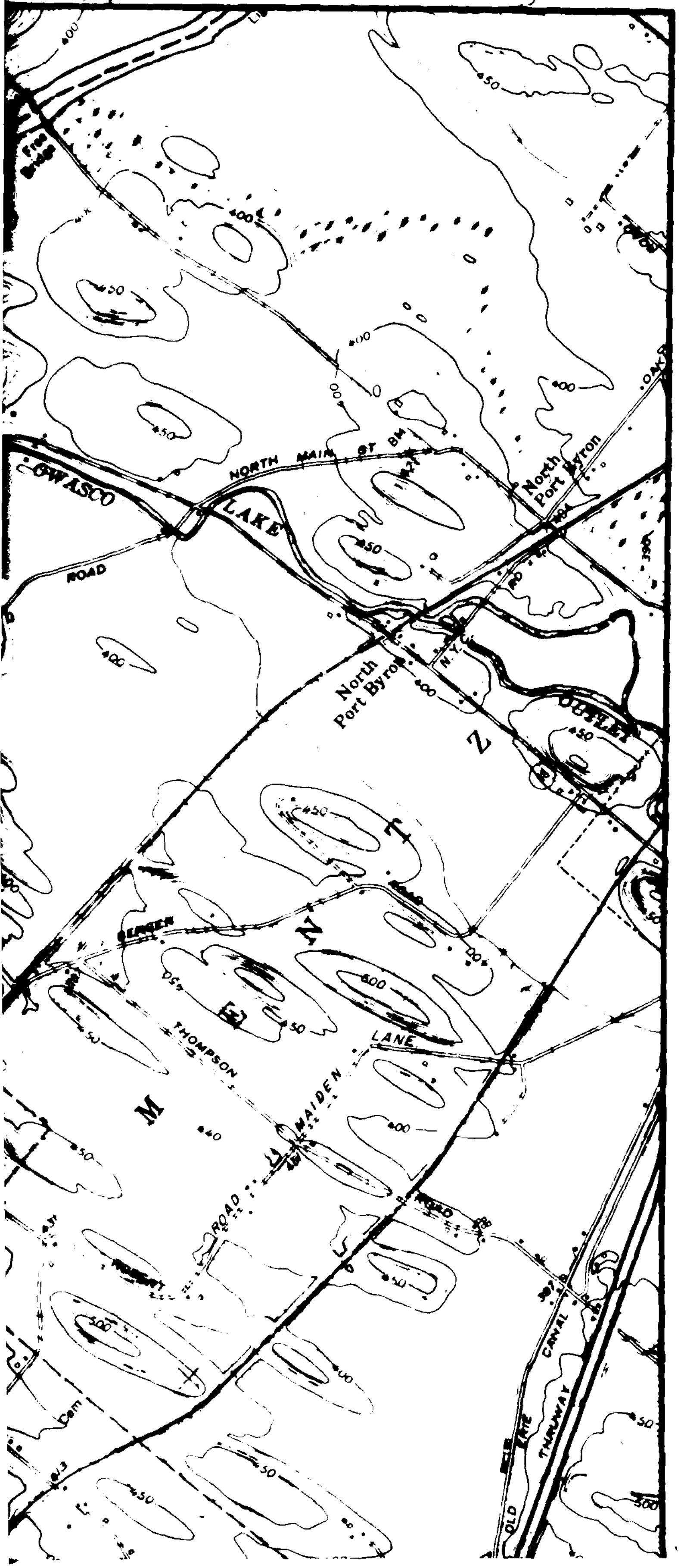
FLOODED AREAS

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

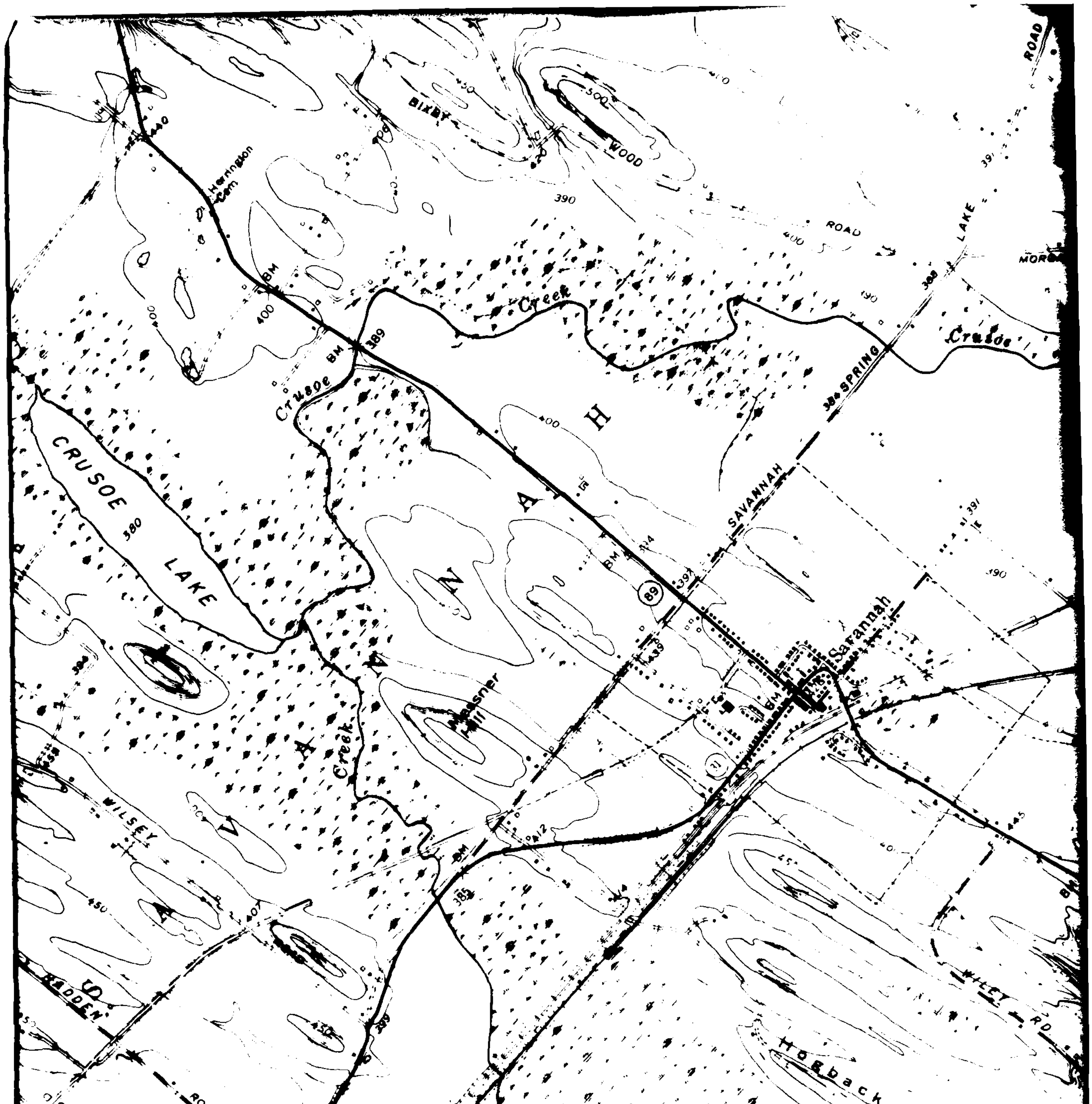
SPRING LAKE
Spring Lake Outlet
C O N Q U E S
CAYUGA CO
WAYNE CO
ALLEN ROAD
BM 453
Flow
394
TAYLOR
DRAKE ROAD
NO 39 ROAD
ROAD
MEAD ROAD
CAIRNCROSS ROAD
387
BM 386
HUNTERS HOME
390
380
400
450
500
550



LAKE
ROAD
SENECA
RIVER
CANAL
Flow
Free Bridge
Hard Point
HARD POINT ROAD
Mosquito Pt
Island
HAITI ROAD
BARGE
Lights
Haiti
OWASCO
ROAD
HOWLAND ISLAND
GAME REFUGE
Howland
BM
444
Island Bridge
High Bridge
Eagle Hill
Camel Island
Hickory Hill
Light
CANAL
Fox Ridge
FOX
Hog Island
HUNTERS HOME ROAD
WAYNE CO
CAYUGA CO
Cem



OWASCO
LAKE
OUTLET
NORTH MAIN ST
North Port Byron
North Port Byron
ROAD
BERGEN
THOMPSON
MAIDEN
LANE
ROAD
M
E
N
T
Z
ERIE
CANAL
OLD
THRUWAY
Cem



BIXBY
WOOD
ROAD
LAKE
ROAD
Harrington Cem
Creek
Crusoe
Crusoe
SPRING
SAVANNAH
CRUSOE
LAKE
S A V A N N A H
Savannah
Messner Hill
Creek
WILSEY
HADDEN
ROAD
ROAD
WILLET RD
Hogback
Ridge
Black
MONTEZUMA
MARSH
BM
389
390
400
380
385
450
416

SENECA
RIVER
CENTRAL
PENN
CENTRAL
PENN
MONTEZUMA
MARSH
Crusoe Island
Crusoe Island
Creek
BARGE
Flow
Bluff Point
ROAD
ROAD
LAKE
SALT
Fort Hill
CAYUGA CO
WAYNE CO
SENECA CO
380
380
89
ERIE

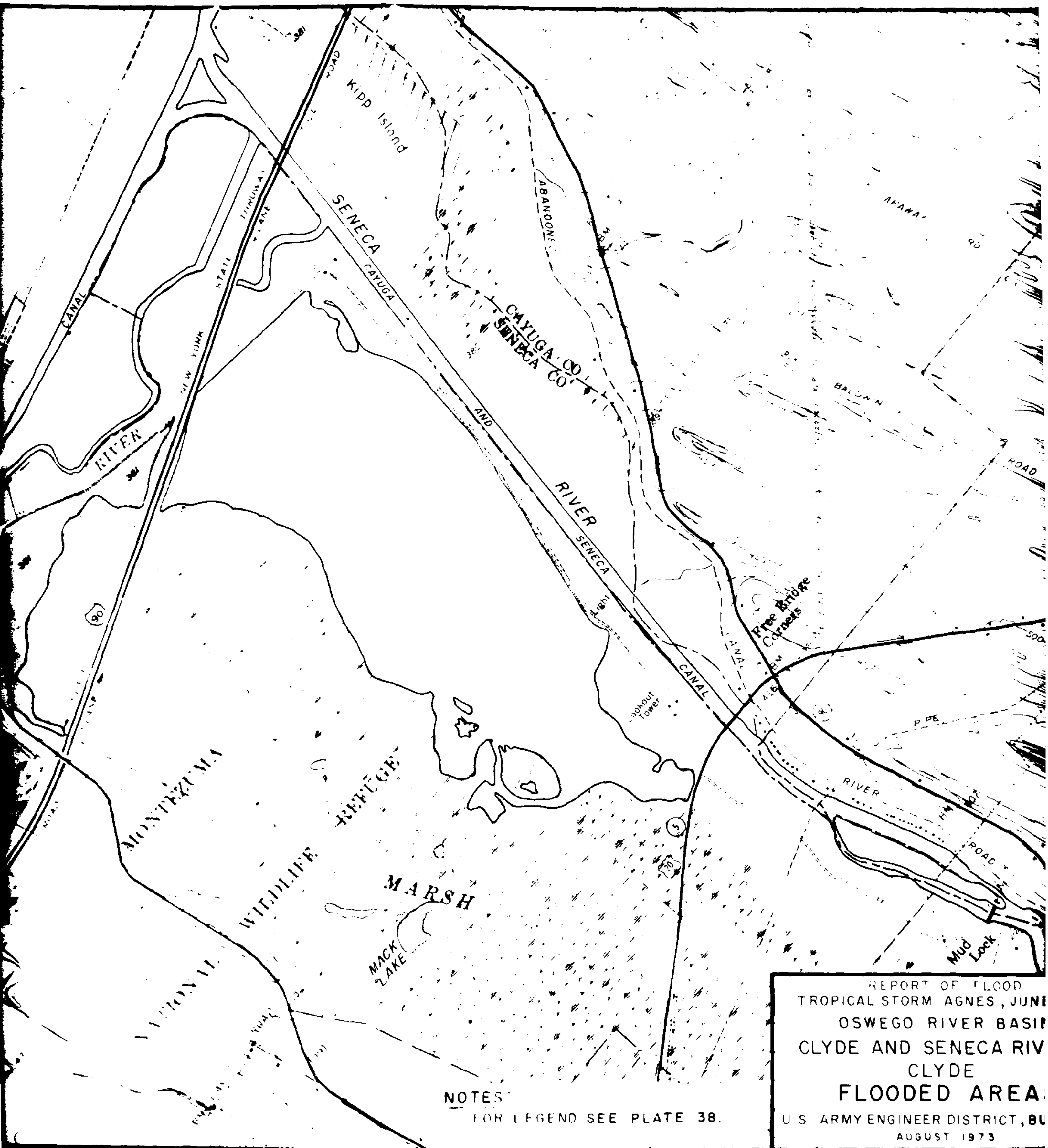
NOTES:
FOR LEGEND SEE PLATE 38.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
SENECA RIVER
SAVANNAH
FLOODED AREAS
U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

Clyde
Clyde
G
A
L
E
N
WELCH
ROAD
BENNING
ROAD
BARGE
TYRE
ROAD
Maple Grove Cem
St Johns Cem
JENKINS
ROAD
CLYDE
CENTRAL
PENN
MARENGO
ROAD
TELEPHONE LINE
LOCK


MONTEZUMA
GARY
ROAD
LOCKPIT
ERIE
CANAL
ROAD
Lockpit
390
CLYDE
RIVER
ROAD
BENTLEY
ROAD
TYRE
460
ROAD
BLOVER
ROAD
LAMB
White
1000
0
1000
2000

WILEY
ROAD
OLMSTEAD
ROAD
N
WAYNE CO
SENECA CO
89
Evans Corner
454
TYRE
OLD
ERIE
CANAL
ARMITAGE
RD.
400
CLINTONS
DITCH
BARGE
CANAL
392
Mays Point
381
CLYDE
RIVER
Armitage Bridge
388
437
Munsons Corner
385
MONTEZUMA
NATIONAL
WILDLIFE
REFUGE
2 LANE
TOLL
90
GRAVEL
White
Brook
ROAD
434
EAST
TYRE
1 MILE
4000
5000
6000
7000 FEET



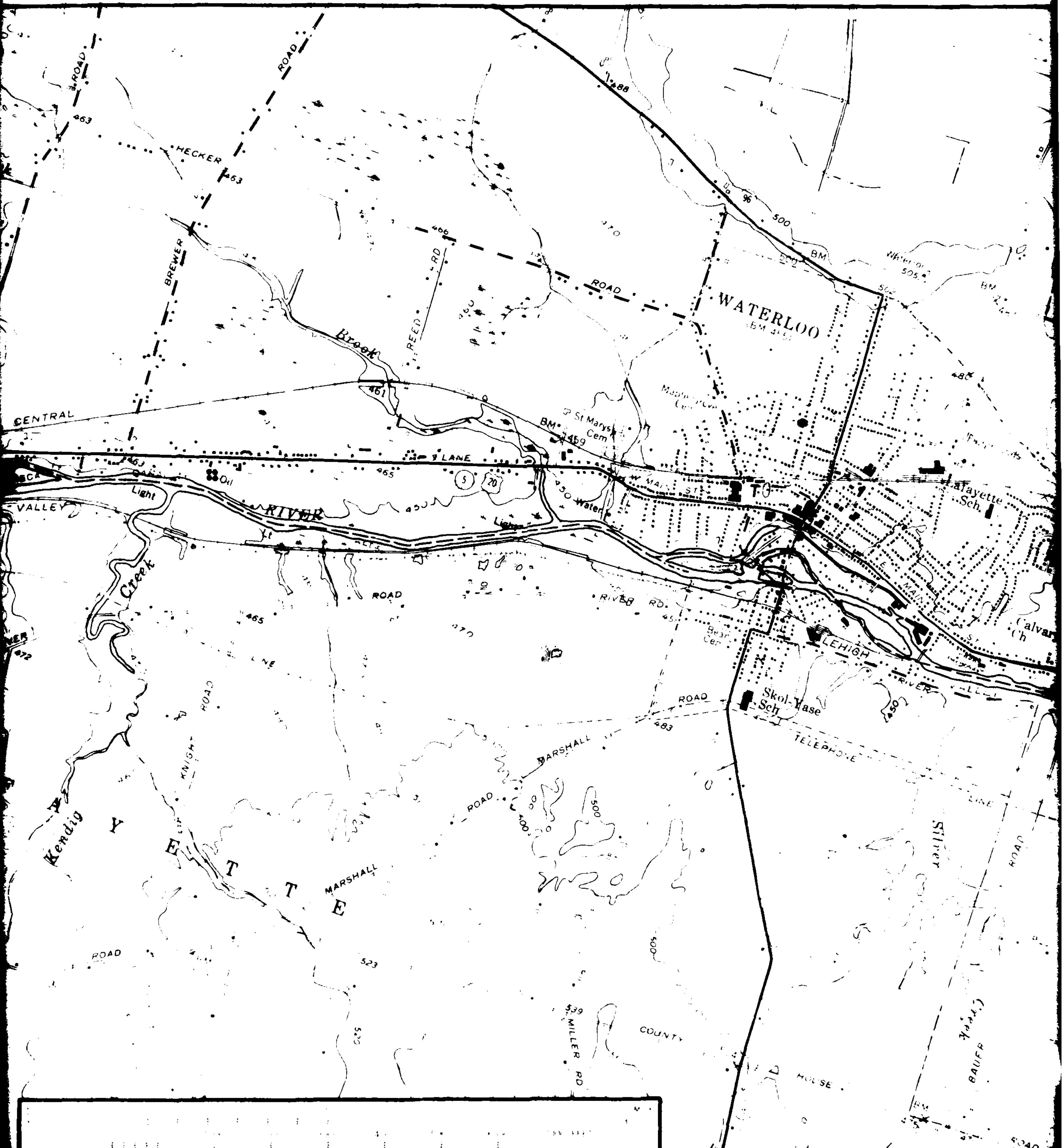
NOTES:
FOR LEGEND SEE PLATE 38.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE
OSWEGO RIVER BASIN
CLYDE AND SENECA RIV
CLYDE
FLOODED AREA
U.S. ARMY ENGINEER DISTRICT, BU
AUGUST 1973

PL

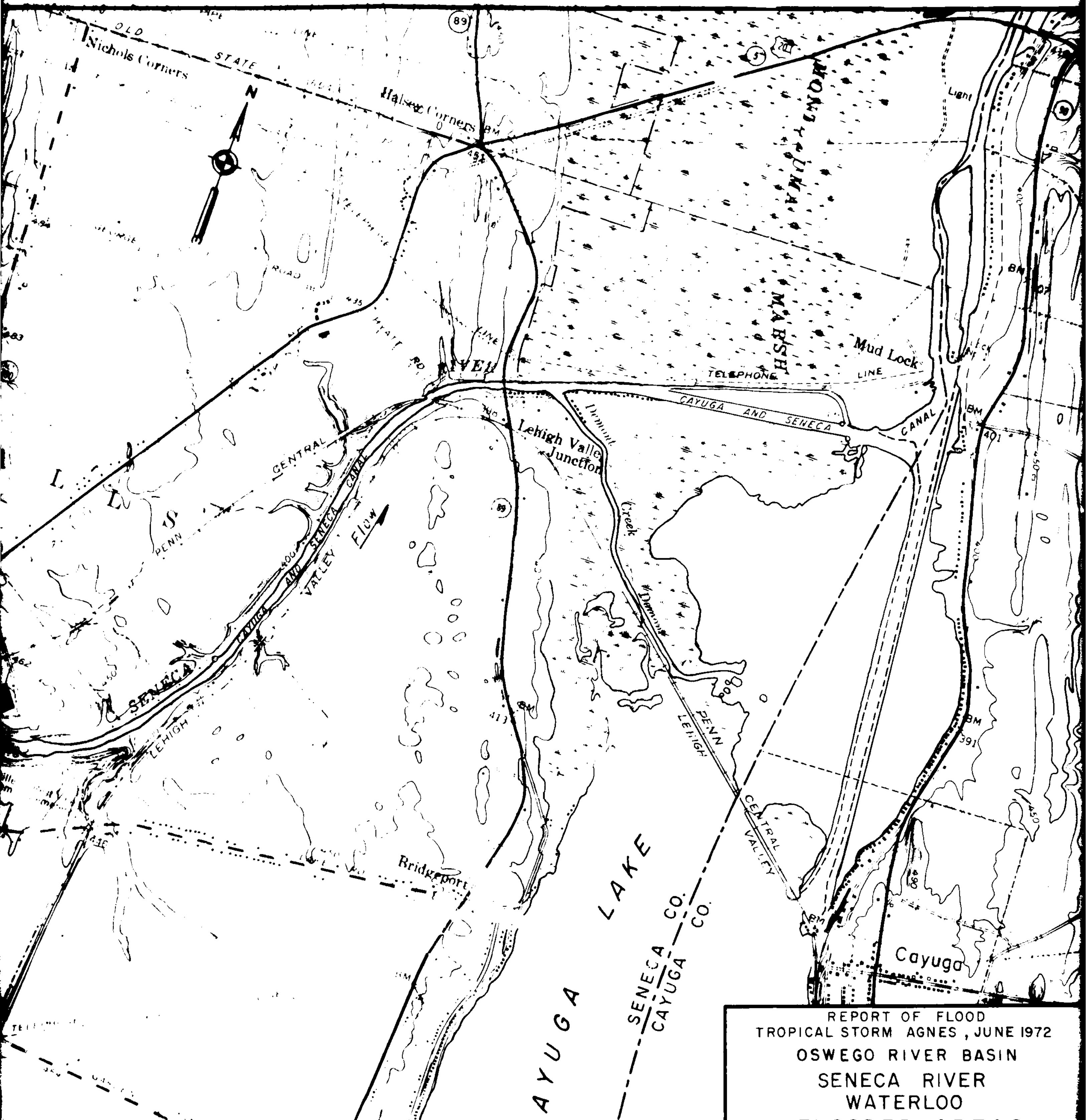
PLATE 47

WATERLOO
Gem Lake
PACKWOOD
ROAD
MANEY
SERVEN
ROAD
PREEMPTION
ROAD
Black
EDWARDS
School No 4
Packwood Corners
BM 472
CENTRAL
PENN
School No 6
BM
462
NORTH
ST
LANE
Substation
Gas
Stack
East Geneva
Drive-in theater
SENECA
AND
LEHIGH
VALLEY
TELEPHONE
FLOW
Lights
CAYUGA
RIVER
RD
SOUTH
ROAD
KNAUSS
Kendig
SENECA LAKE
Seneca Park
PIERS
WOODWORTH
ROAD
LEHIGH
VALLEY



WATERLOO
CENTRAL
HECKER
BREWER
ROAD
REED RD
Brook
LANE
W MAIN ST
St Marys Cem
Light
Oil
Water
RIVER
VALLEY
Creek
RIVER RD
E MAIN ST
LEHIGH
RIVER
Lafayette Sch.
Calvary Ch
Skol-Yase Sch
ROAD
TELEPHONE
LINE
MARSHALL
ROAD
MARSHALL
KNIGHT
ROAD
Kendig
Creek
Y E T T E
ROAD
COUNTY
HOUSE
MILLER RD
Silver
Creek
BAUER
ROAD
463
465
483
523
539


Van Cleef
Lake



NOTES:
FOR LEGEND SEE PLATE 38

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
SENECA RIVER
WATERLOO
FLOODED AREAS
U.S ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 4

1972

S

FFALO

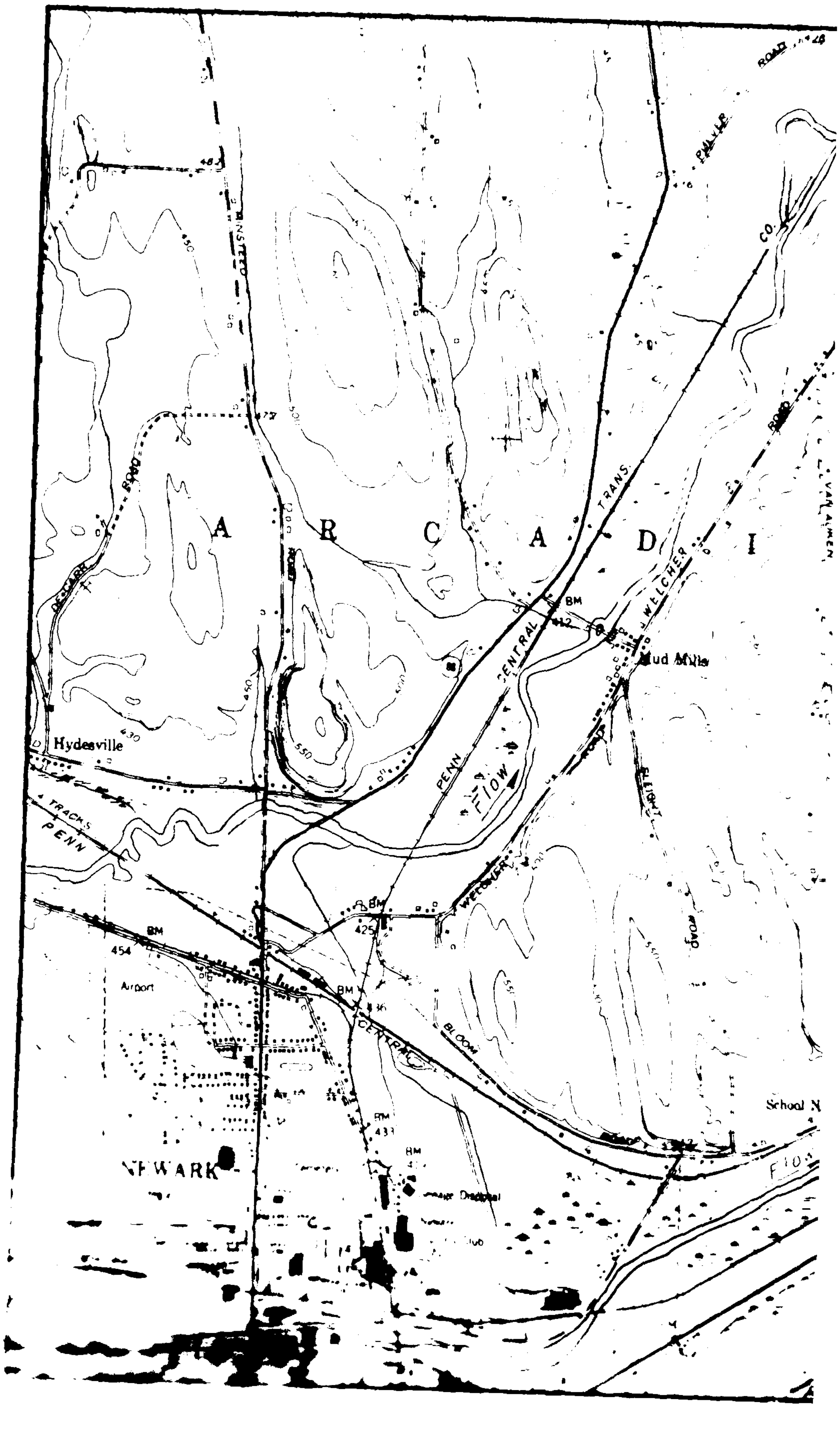
ATE 48

LYONS
(BM 438)
Lyons Park
CLINTON S
BARGE
CANAL
CENTRAL
TRACKS
Gas
COLE
PENN
OUTLET
South Lyons Cem
SOUTH
ALLOWAY
Flow
LYONS
RD.
HELCH
RD.
SCHWAB
CANANDAIGUA
Alloway
LEACH
RD
ROAD
WAYNE CO
ONTARIO CO
PRE-EMPTION
ROAD
Cem
DUBLIN
BROOK
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET


LYONS
WARNCKE ROAD
STORMS ROAD
STOKES RD
GANNET ROAD
Lock
Berlin
Brook
HIGH STREET
ERIE
CENTRAL
CANAL
OLD
PENN
TRACKS
N
UNDERVILLE
EYER RD
BELMER RD
Flow
BARGE
RIVER
ROAD
CLYDE
STELL ROAD
FOOTE ROAD
GANZ

NOTES:
FOR LEGEND SEE PLATE 38.

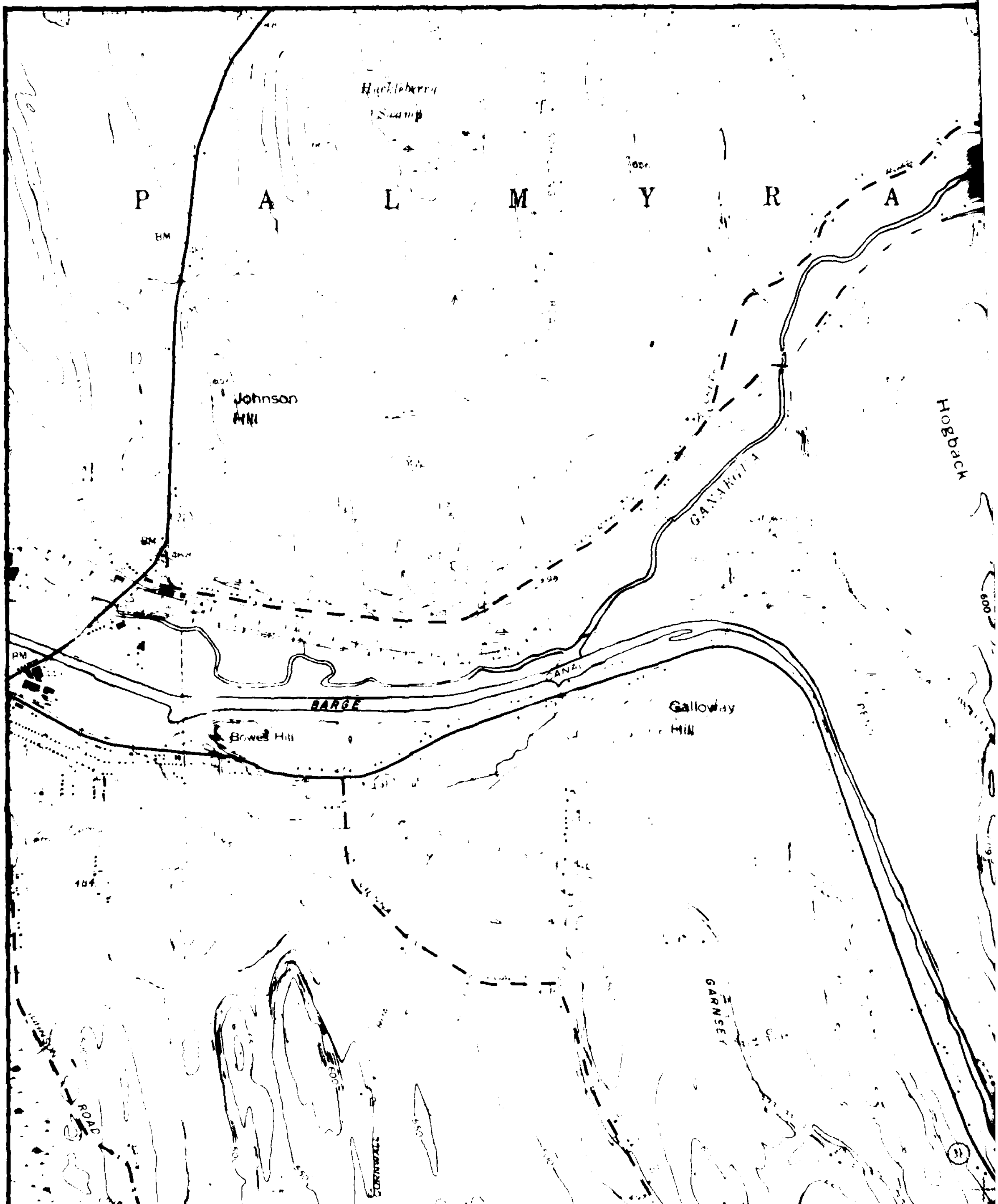
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
CLYDE RIVER
CLYDE—LYONS
FLOODED AREAS
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



A R C A D I
Hydesville
Mud Mills
NEWARK
Airport
School N
FLOW
FLOW
PENN
CENTRAL
TRANS.
CO.
TRACKS
WELCHER
BLOOM
ROAD
BM
454
425
436
433
412
430
450
550
483

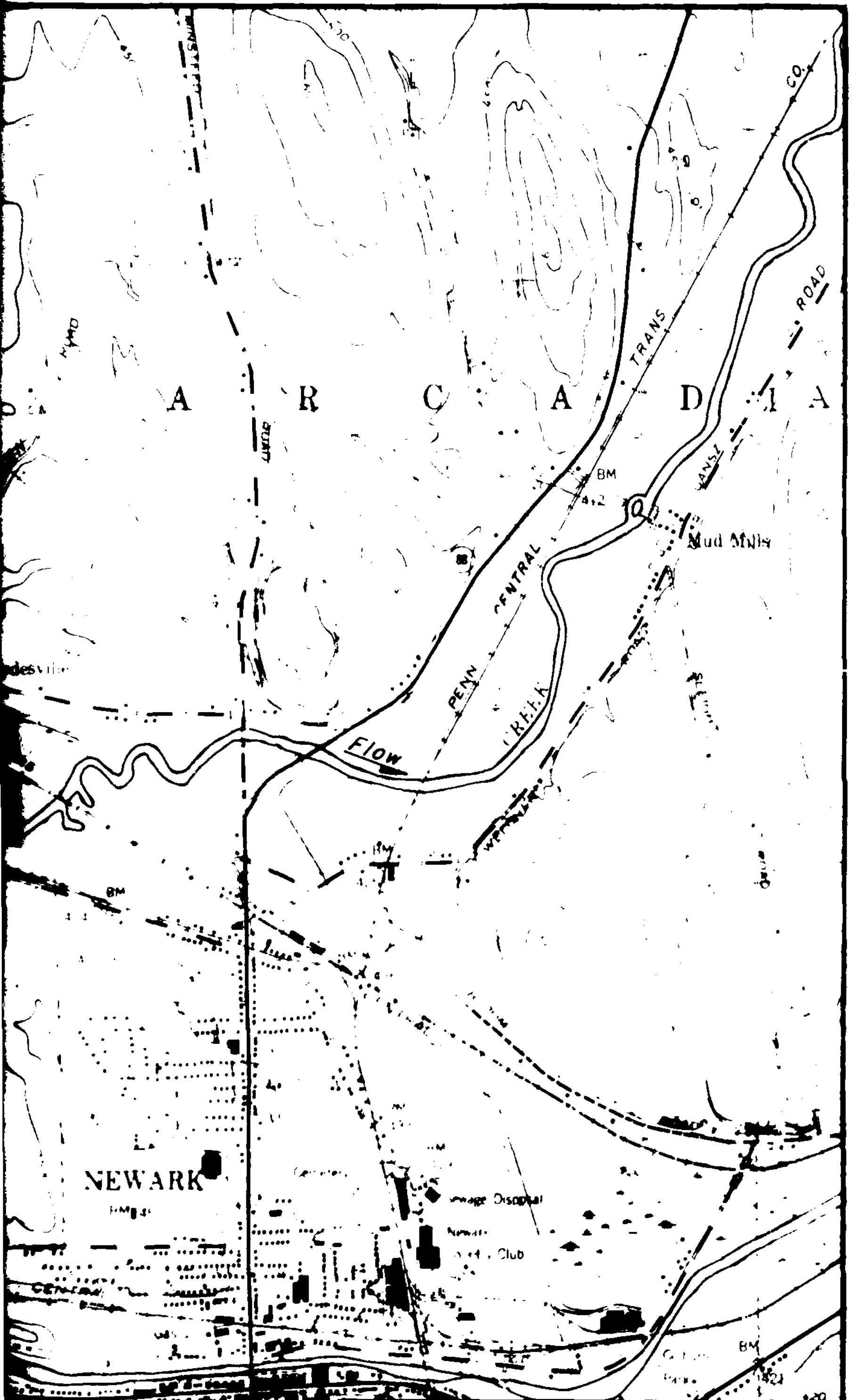

N
BAUER
GANARGUA
ARCADIA
ZURICH
NORRIS
ROAD
Lyons
Rural Cem
Butternut
ROSS
ROAD
CLAYTON
CREEK
BARGE
CANAL
NEWARK
DRY DOCK
OLD
LYONS
ERIE
County
Home
BM
403
445
CANAL
FLOW
PENN
CENTRAL
L Y O N S
CANANDAIGUA OUTLET
BAUER ROAD
BM 432
438
South Lyons
Cem
MILE
L


Pilgrimport
L Y O N S
G A L E N
LYONS
OSWEGO RIVER BASIN
NEW YORK STATE BARGE CANAL
LYONS
FLOODED AREAS



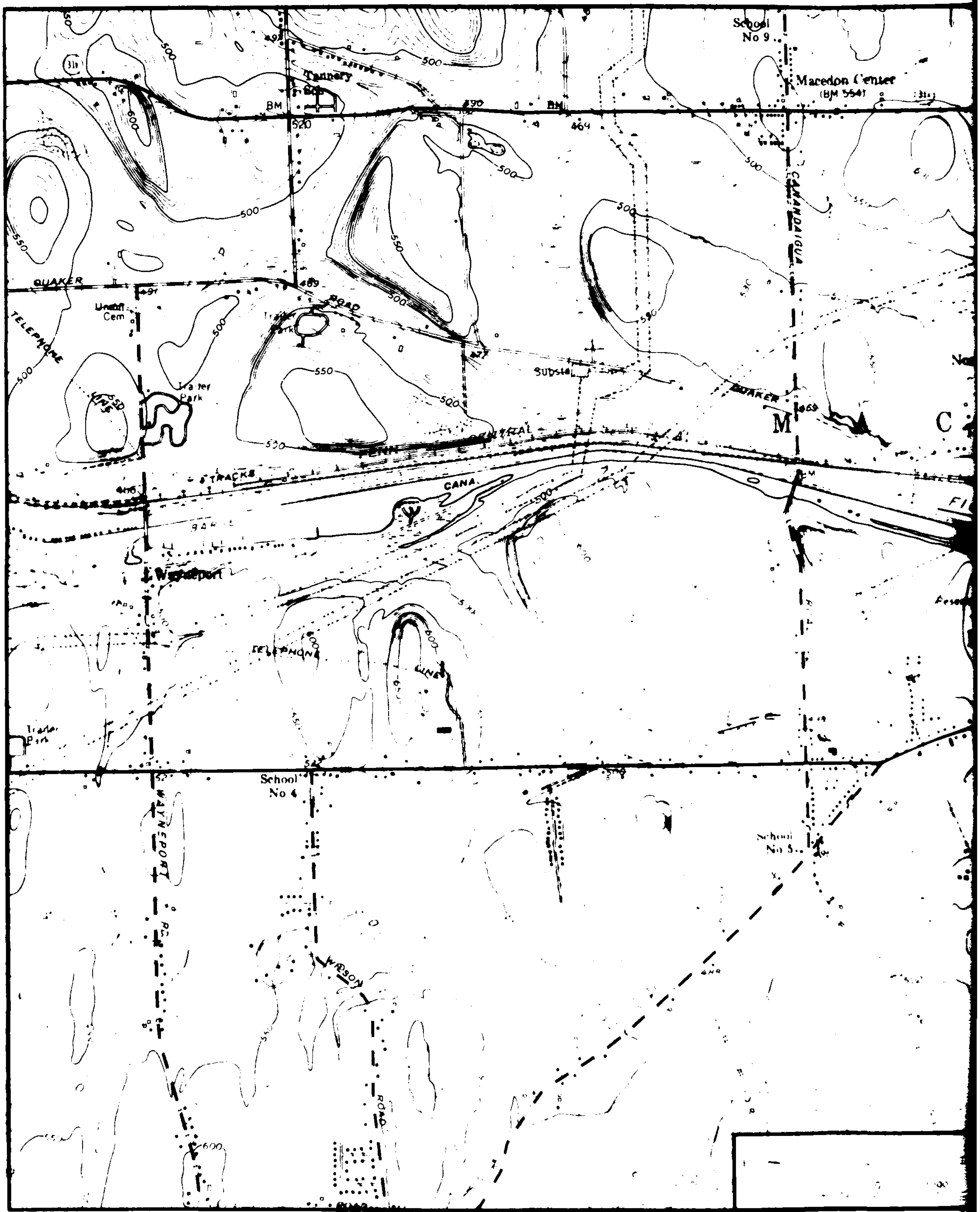
Huckleberry
Swamp
P A L M Y R A
Johnson
Hill
Hogback
GANARGUA
BARGE
CANAL
Galloway
Hill
Bowes Hill
GARNSEY
ROAD
WAYNE CO
ONTARIO CO

FLOW
CREEK
PENN
HYDESVILLE
TRACKS
East Palmyra
Beals Hill
School No 14
N
Hogback
Hill
TRANS
PENN
Hydesville
PENN
TRACKS
PENN
CANAL
THE WIDE WATERS
CENTRAL
FLOW
BARGE
School No 9
NOTES

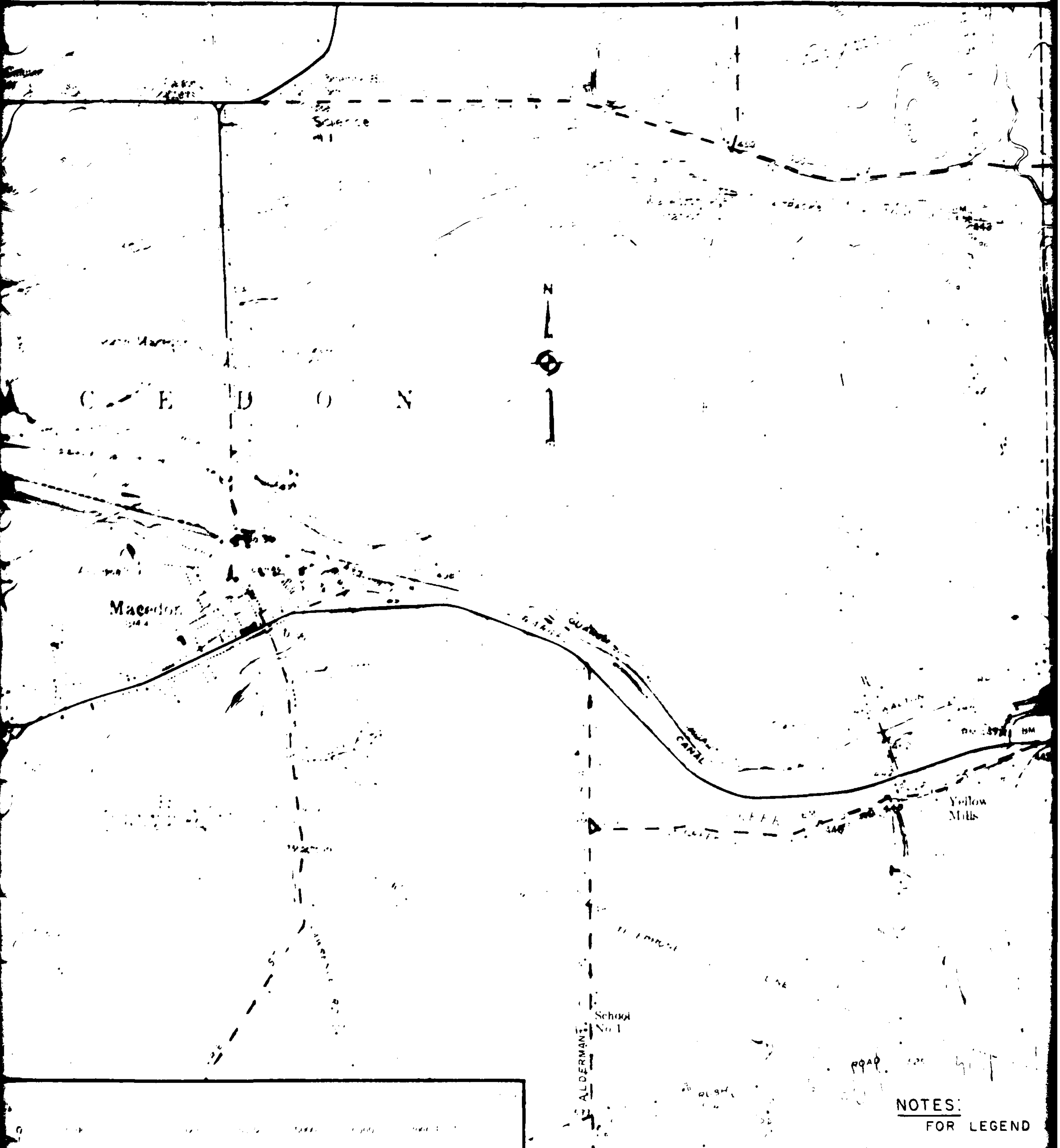


REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
NEW YORK STATE BARGE CANAL
NEWARK
FLOODED AREAS
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

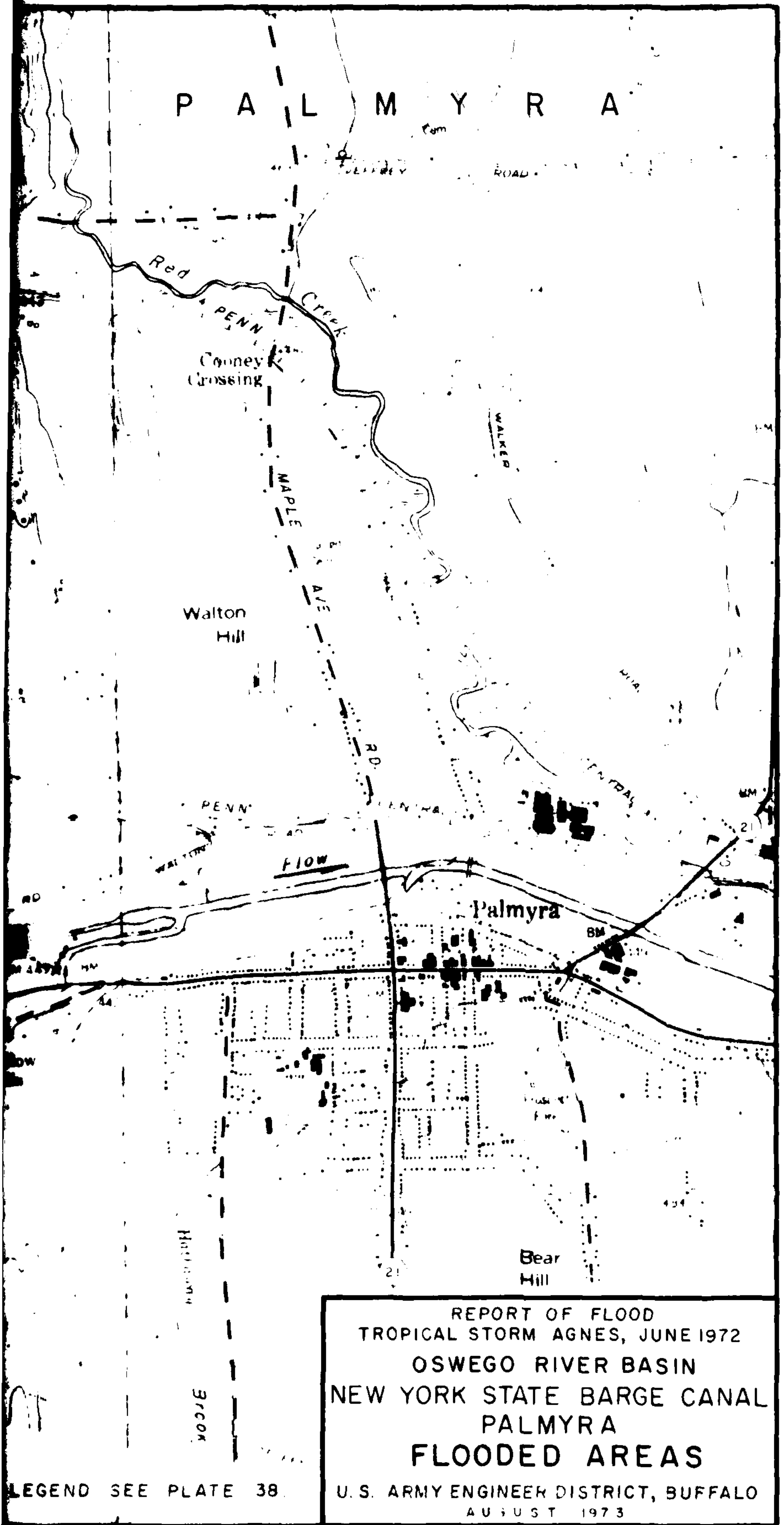
LEGEND SEE PLATE 38



School
No 9
Macedon Center
(BM 554)
Tannery
BM
520
490
BM
469
500
550
600
QUAKER
ROAD
Unoff.
Cem
TELEPHONE
Trailer
Park
Substa
QUAKER
M
C
PENN CENTRAL
TRACKS
CANAL
BARGE
CANANDAIGUA
Wayneport
TELEPHONE
LINE
Trailer
Park
School
No 4
School
No 5
WAYNEPORT
RD
WILSON
ROAD

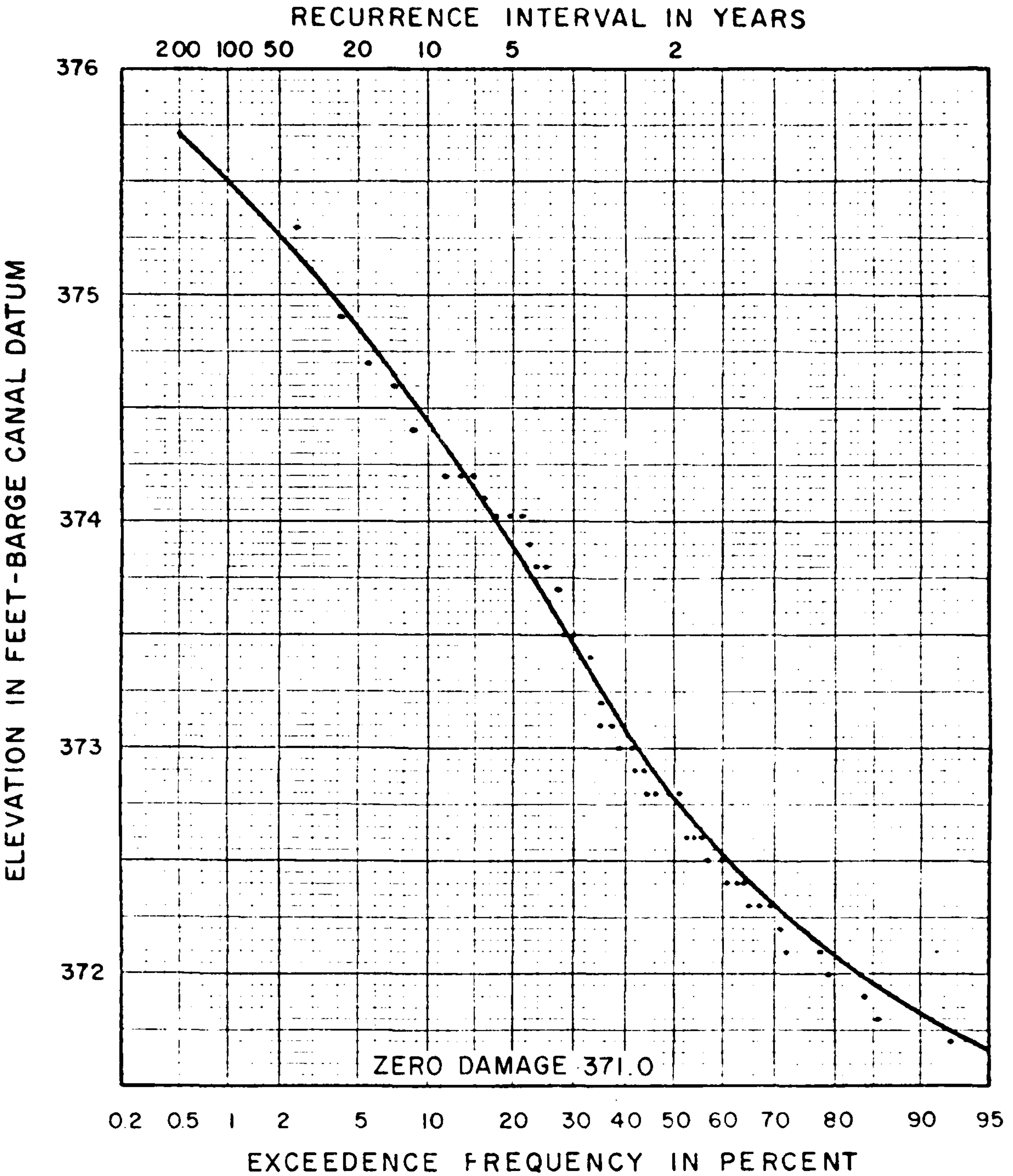


C E D O N
N
Macedon
CANAL
Yellow Mills
School No. 1
ALDERMAN
NOTES:
FOR LEGEND



REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
NEW YORK STATE BARGE CANAL
PALMYRA
FLOODED AREAS
U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

LEGEND SEE PLATE 38



NOTES:

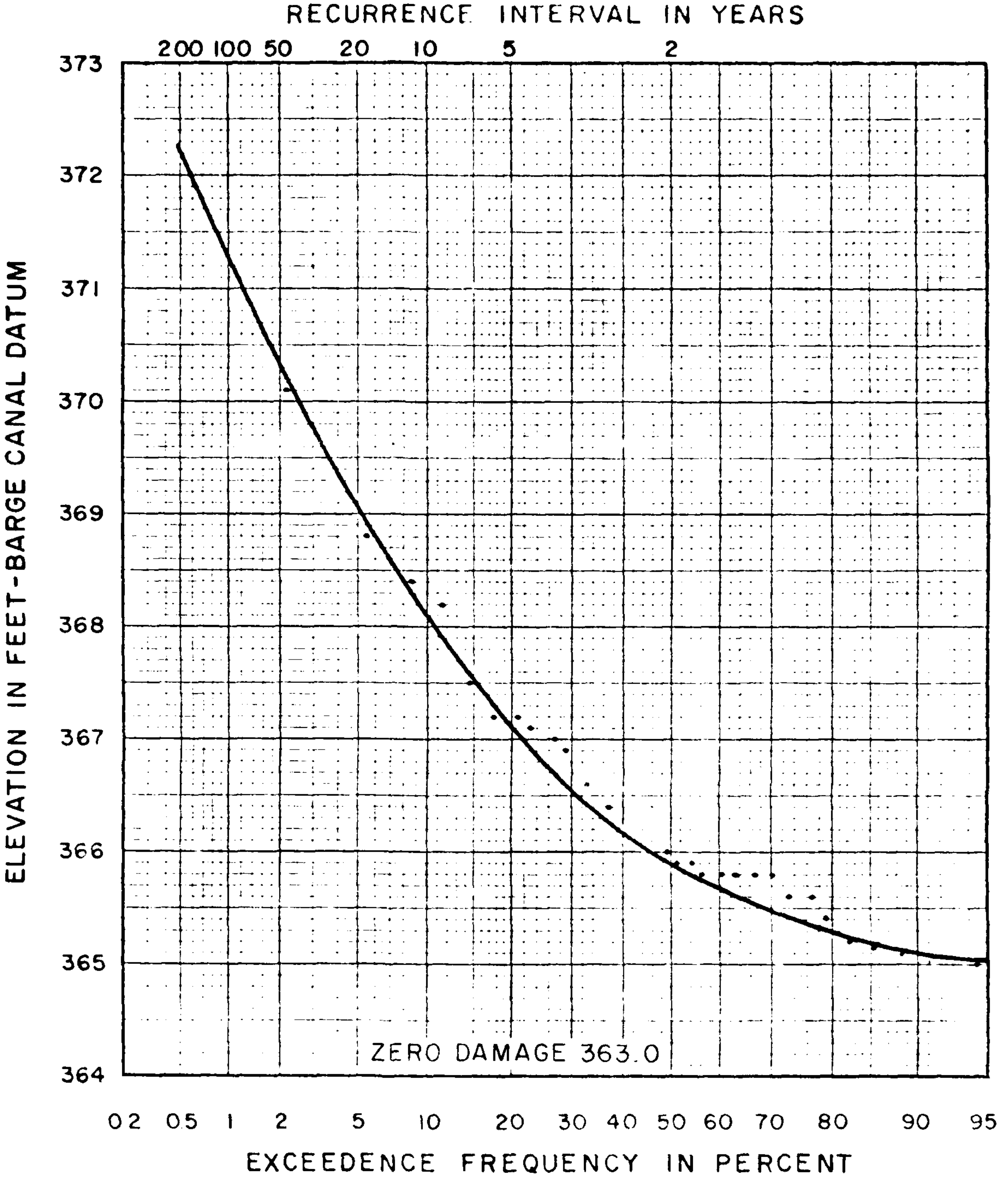
P.O.R. 1905-1972 (68 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH O-1
ONEIDA RIVER

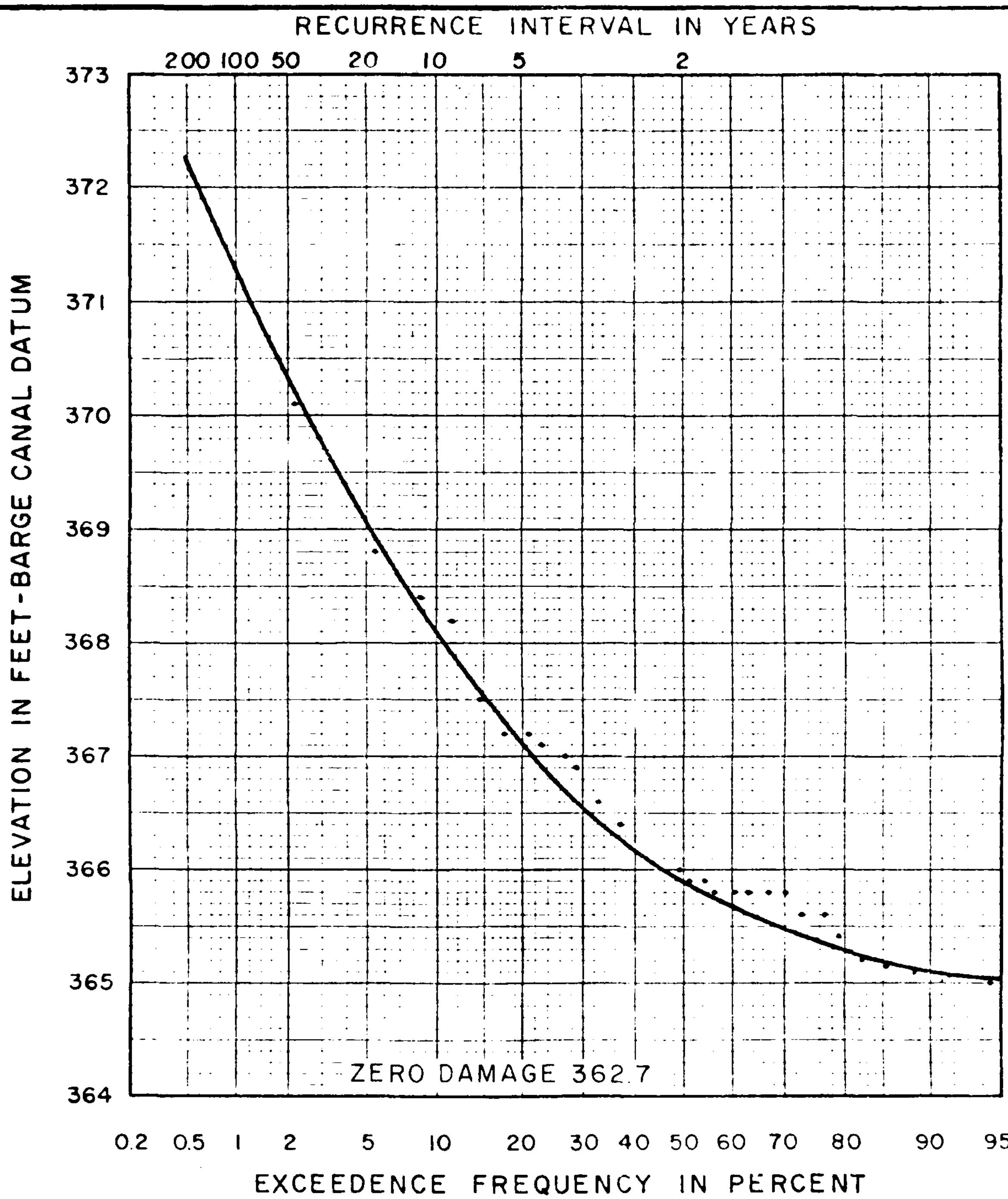
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P.O.R. 1936-1972 (37 YEARS)
DOTS INDICATE PLOTTING POINTS.

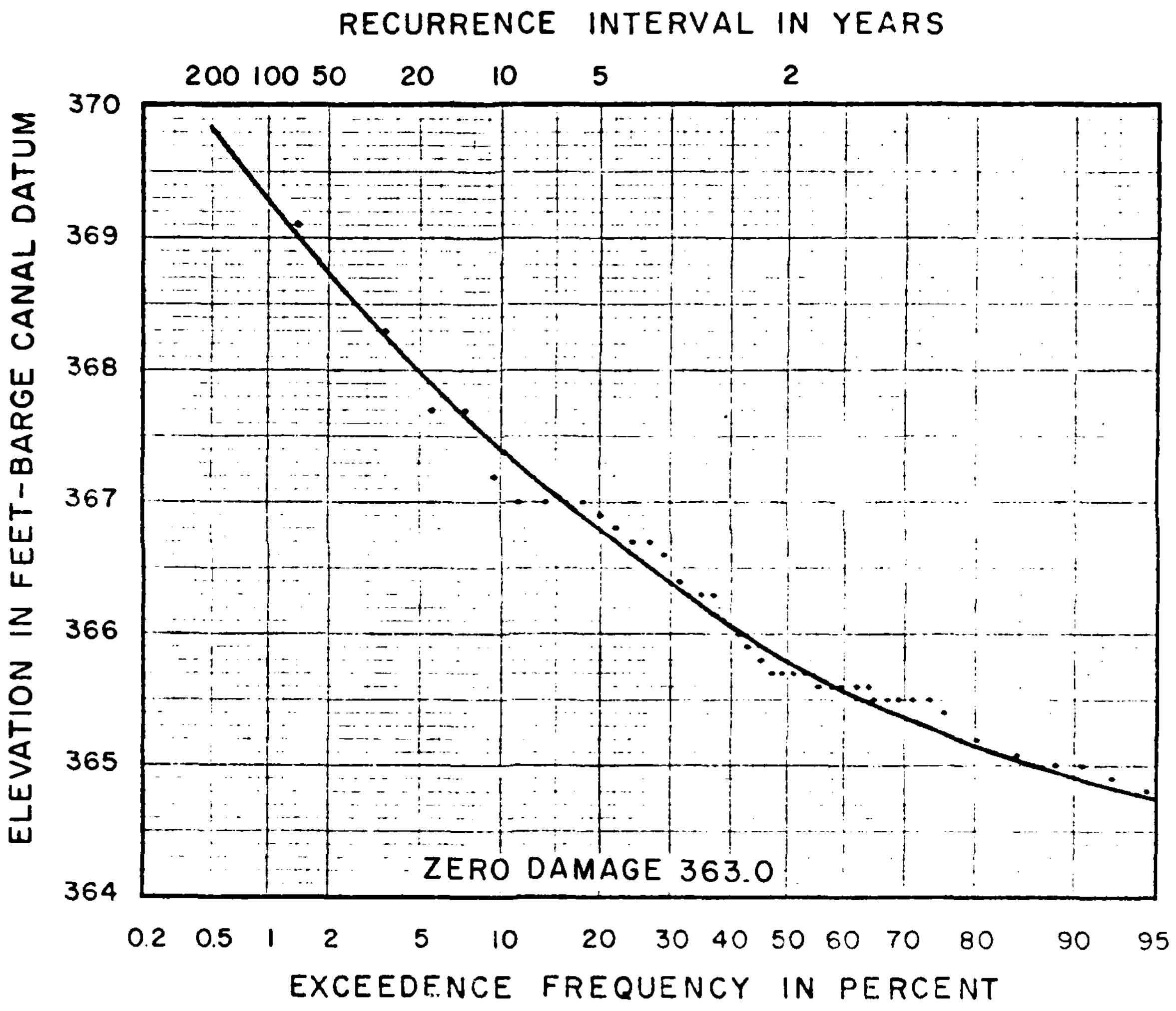
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH O-2
ONEIDA RIVER
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P. O. R. 1936-1972 (37 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH O-3
MUD CREEK
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

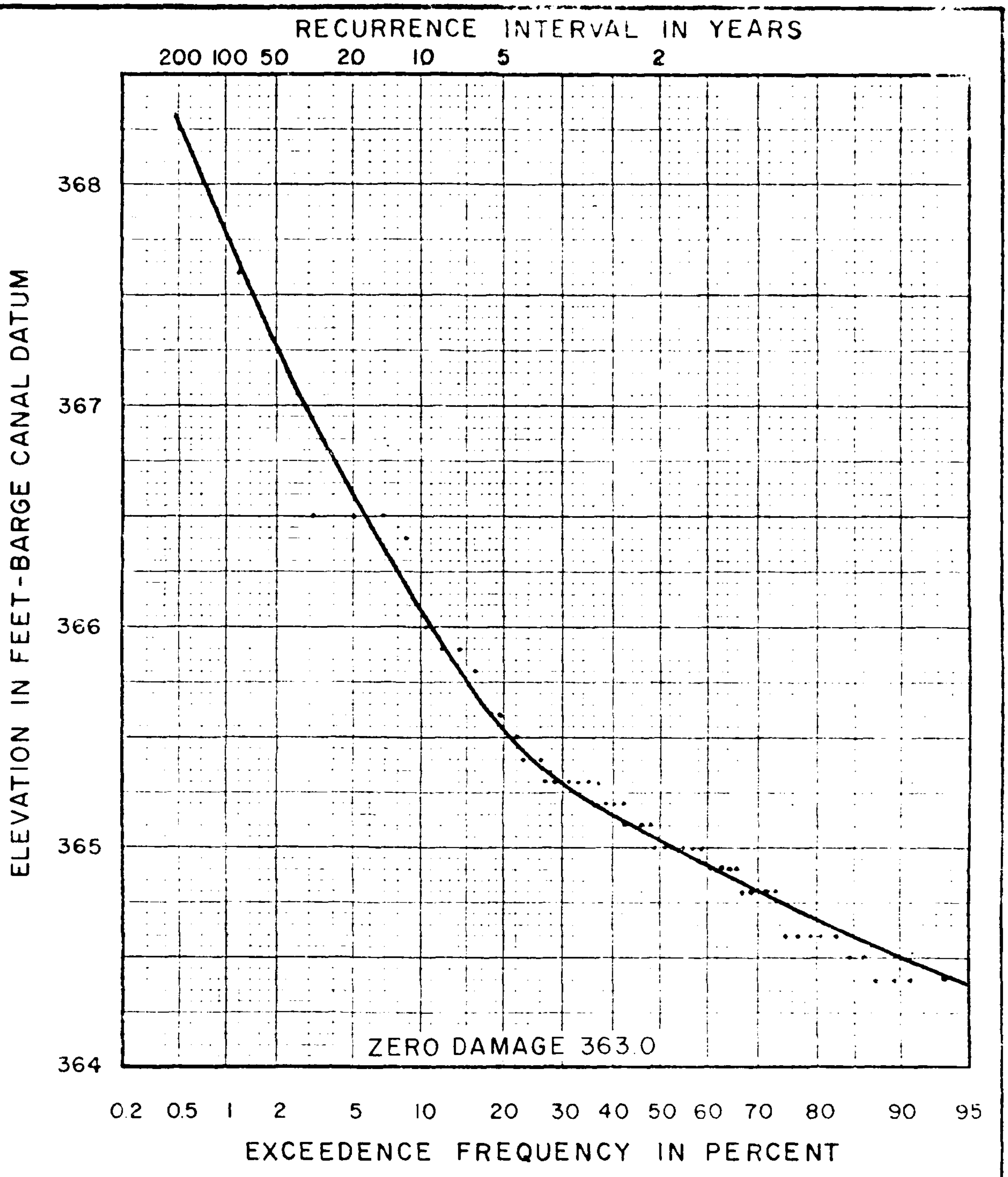
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH O-4

SIX MILE CREEK

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 19[illegible]



NOTES:

P.O.R. 1912-1972 (61 YEARS).

DOTS INDICATE PLOTTING POINTS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY C[illegible]
[illegible]

AD-A101 235 CORPS OF ENGINEERS BUFFALO N Y BUFFALO DISTRICT F/G 8/8

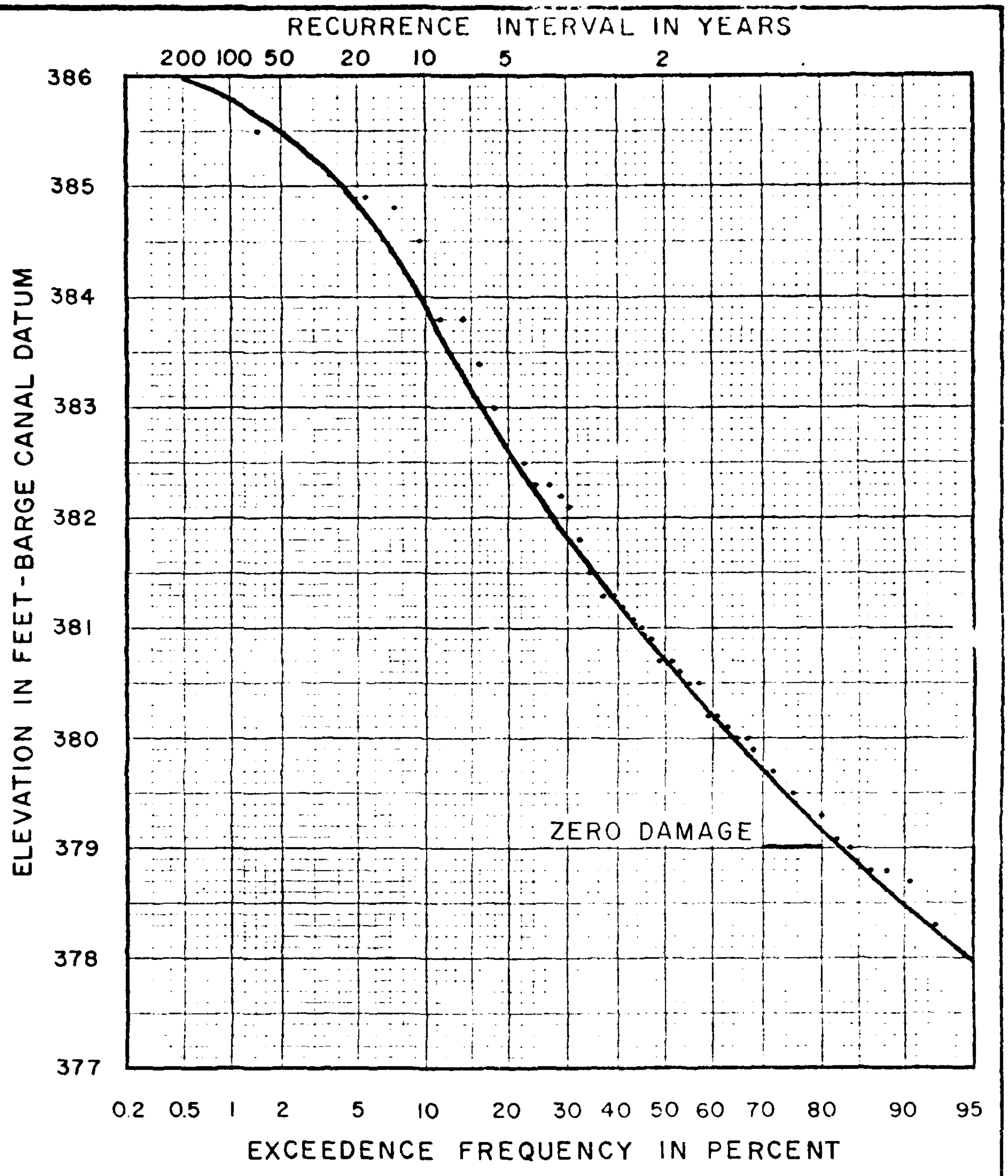
REPORT OF FLOOD, TROPICAL STORM AGNES, JUN 1972, OSWEGO RIVER B--ETC(U)

AUG 73

UNCLASSIFIED NL

3 OF 4

AD A101235



NOTES:

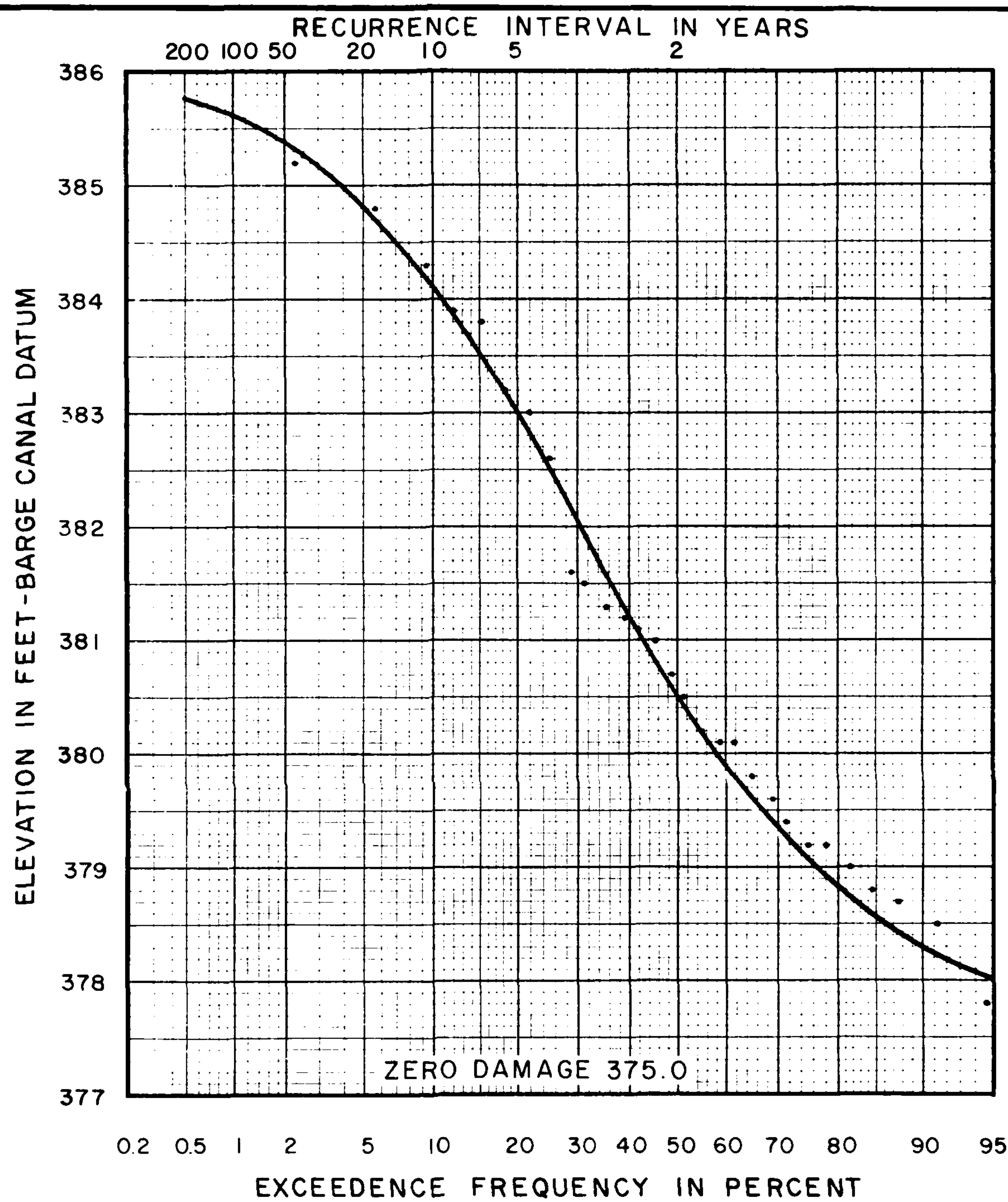
P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH S-3
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



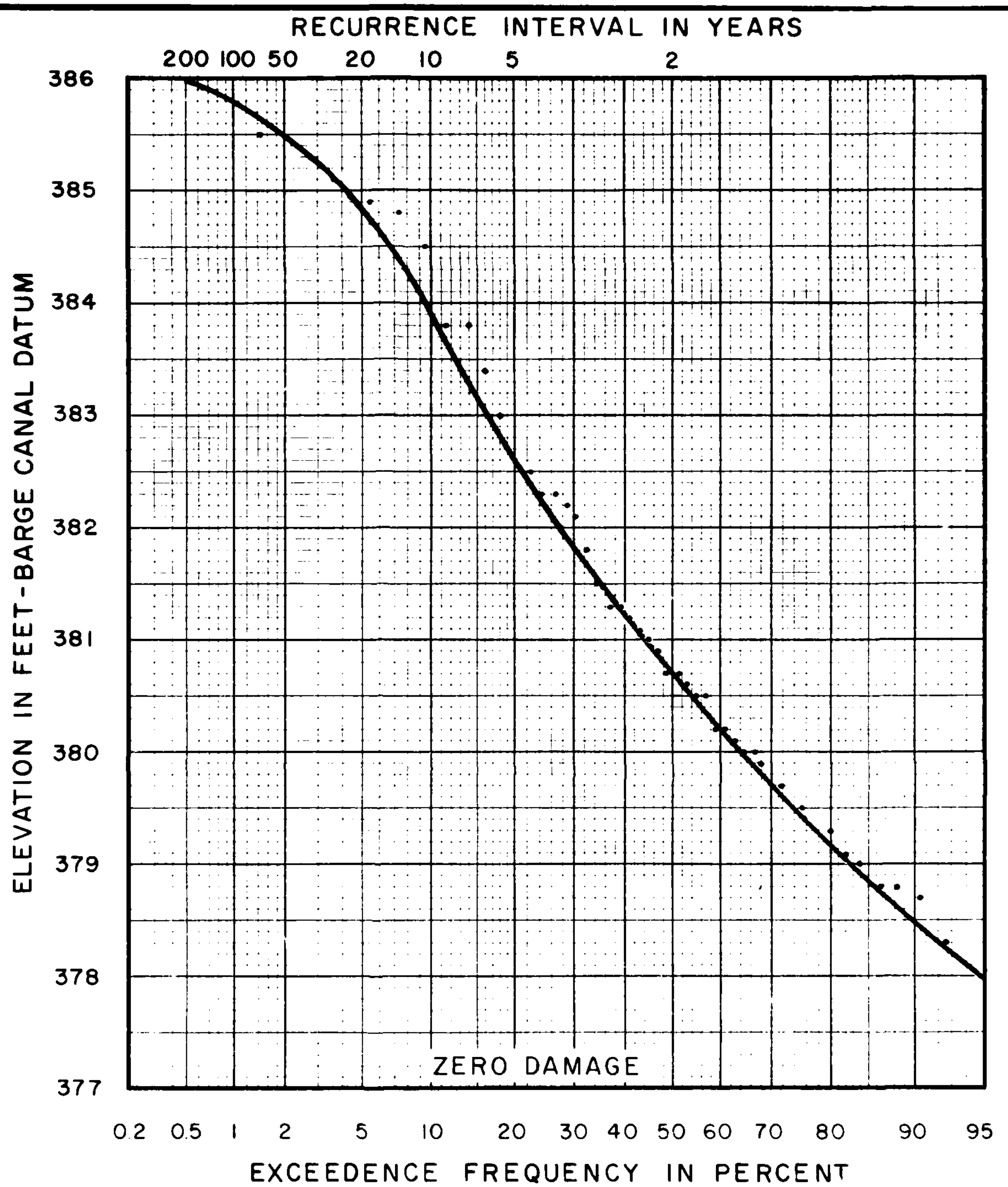
NOTES:

P.O.R. 1943-1972 (30 YEARS)
DOTS INDICATE PLOTTING POINTS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH S-4
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

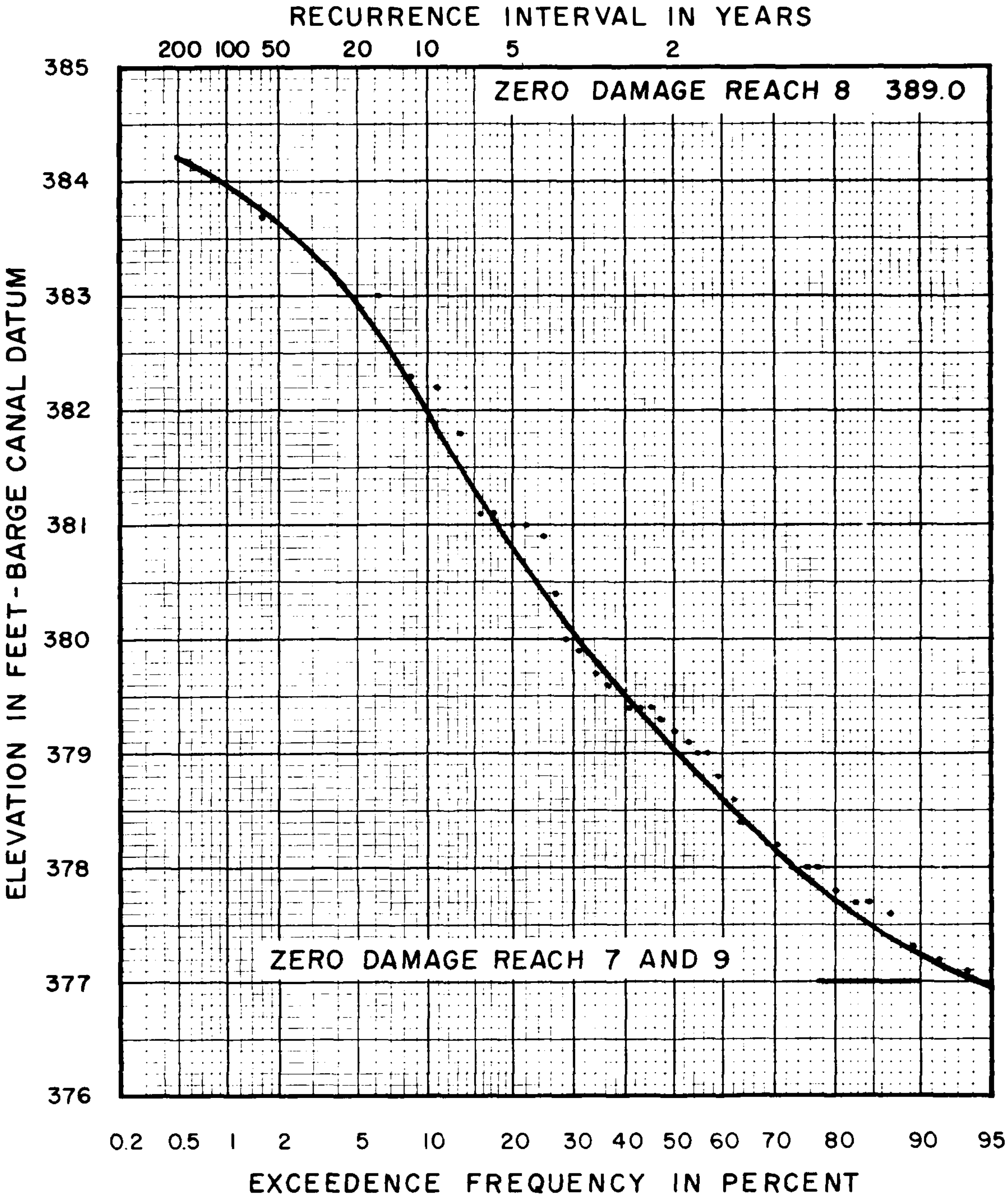
P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH S-5 AND S-6
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

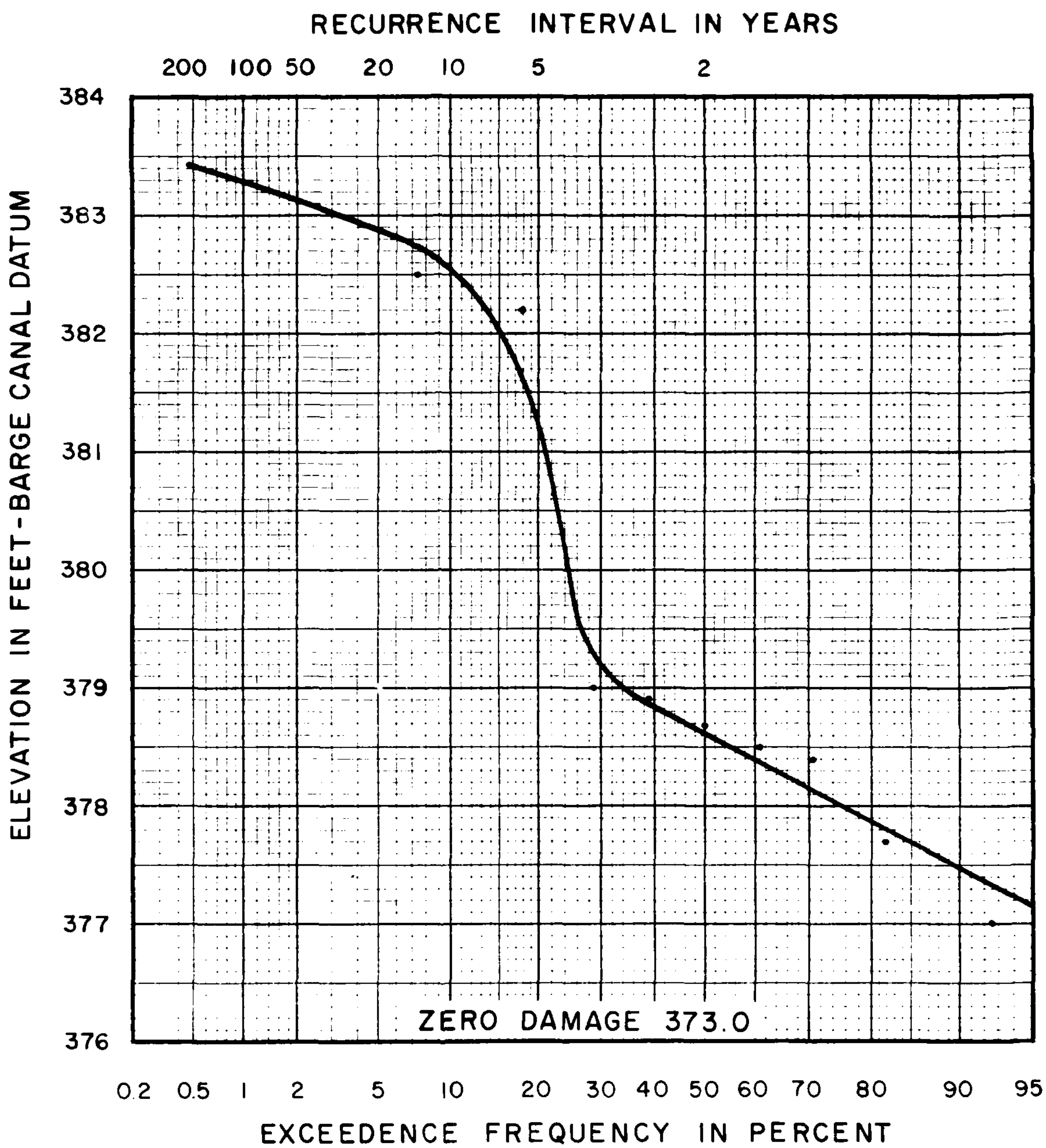
P. O. R. 1936-1972 (37 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

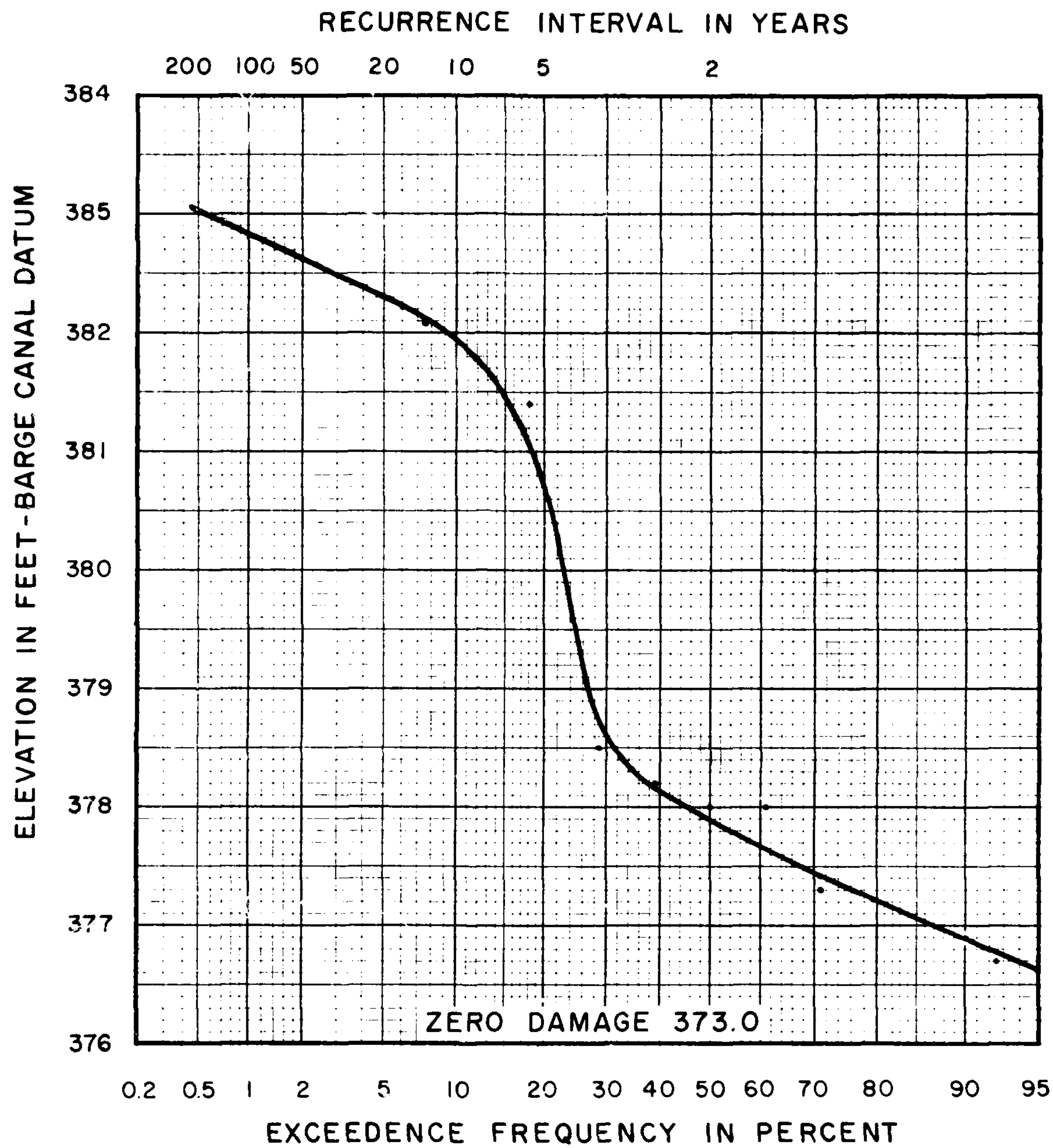
STAGE-FREQUENCY CURVE
REACH S-7, S-8 & S-9
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



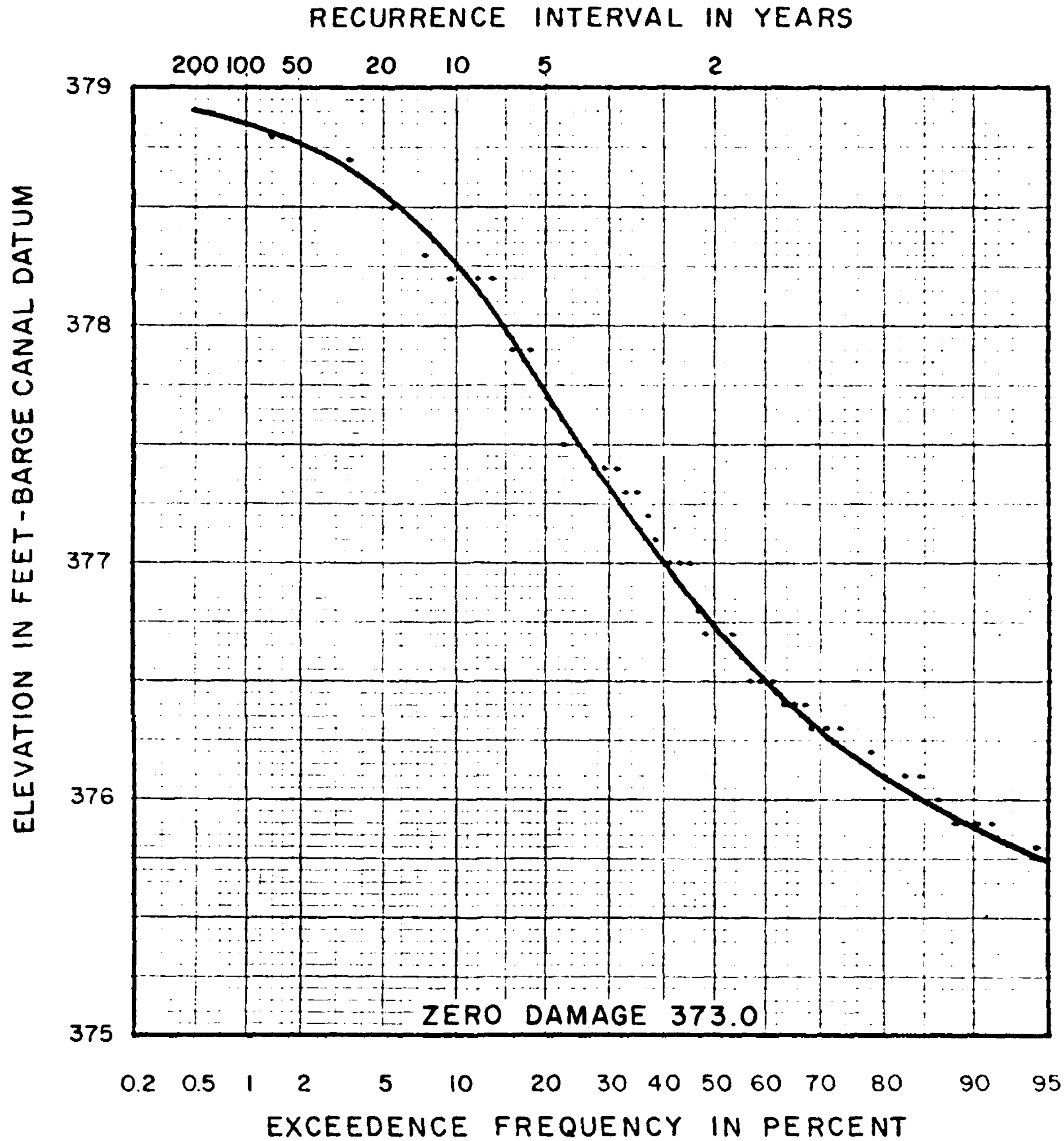
NOTES:
P.O.R. 1933-1941 (9 YEARS).
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH S-10
CROSS LAKE
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:
P.O.R. 1933-1941 (9 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH S-11
SENECA RIVER
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

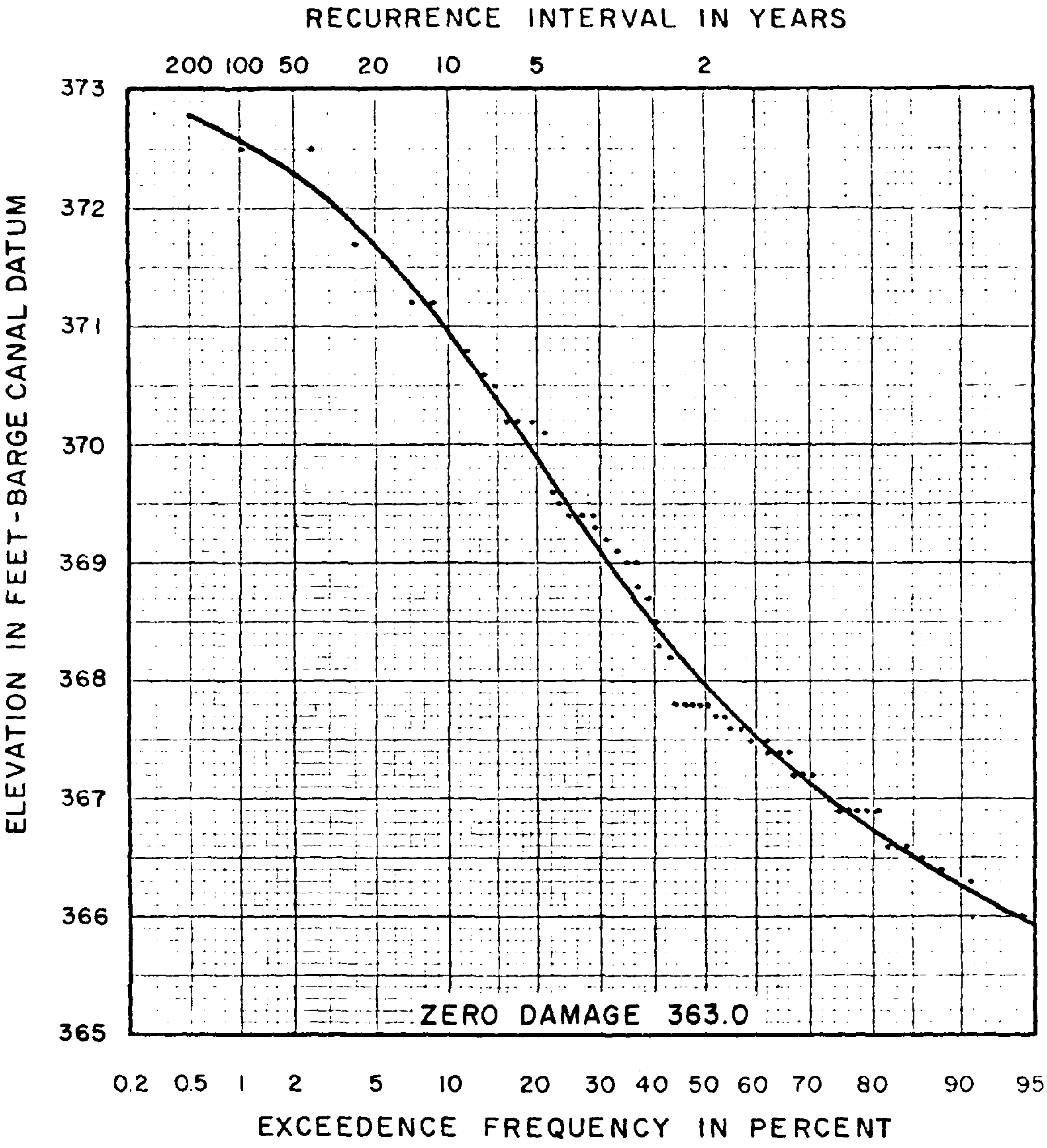
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH S-12

DEAD CREEK

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

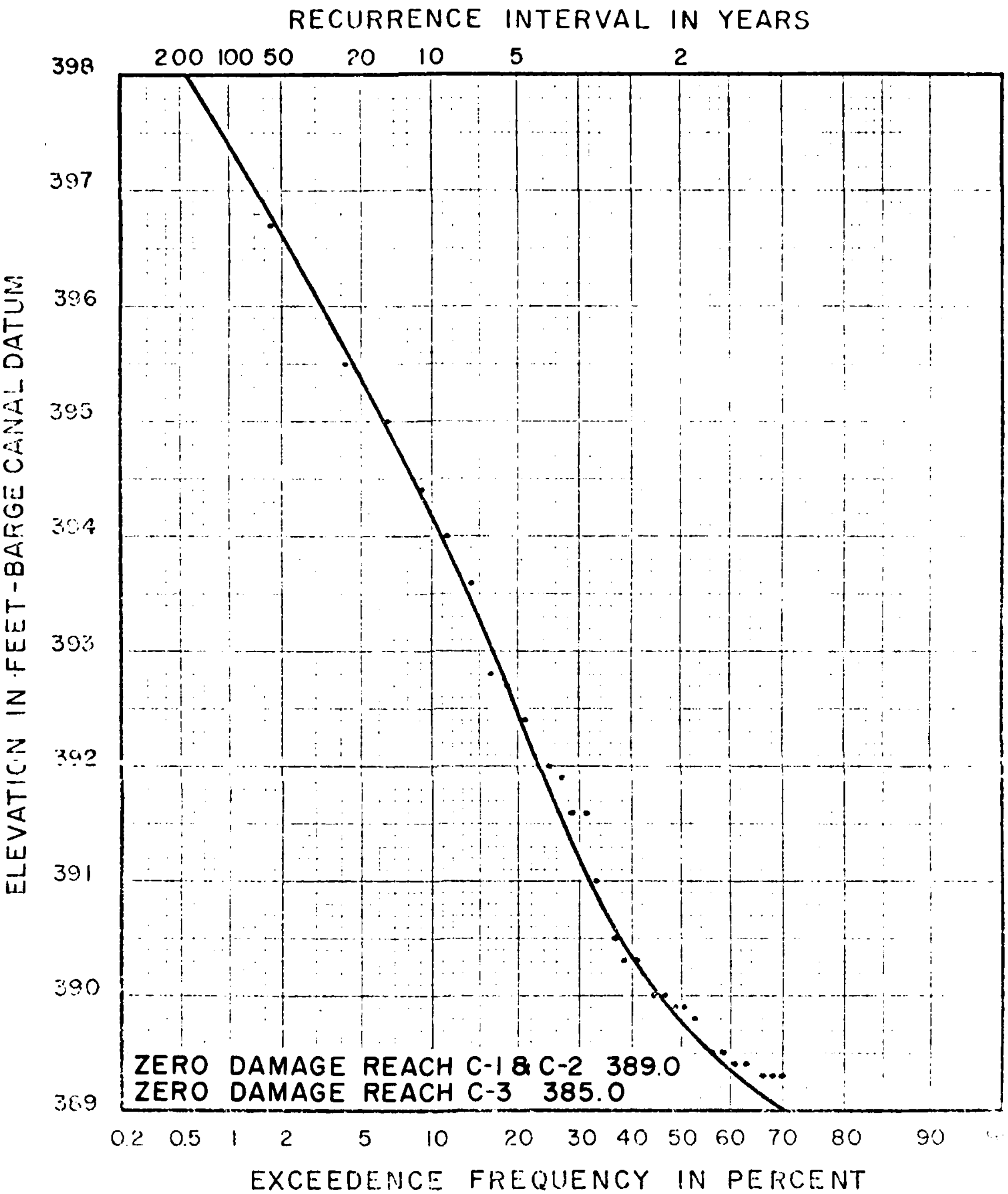
P.O.R. 1904–1972 (69 YEARS)

DOTS INDICATE PLOTTING POINTS

PEPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH S-13 AND S-14
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

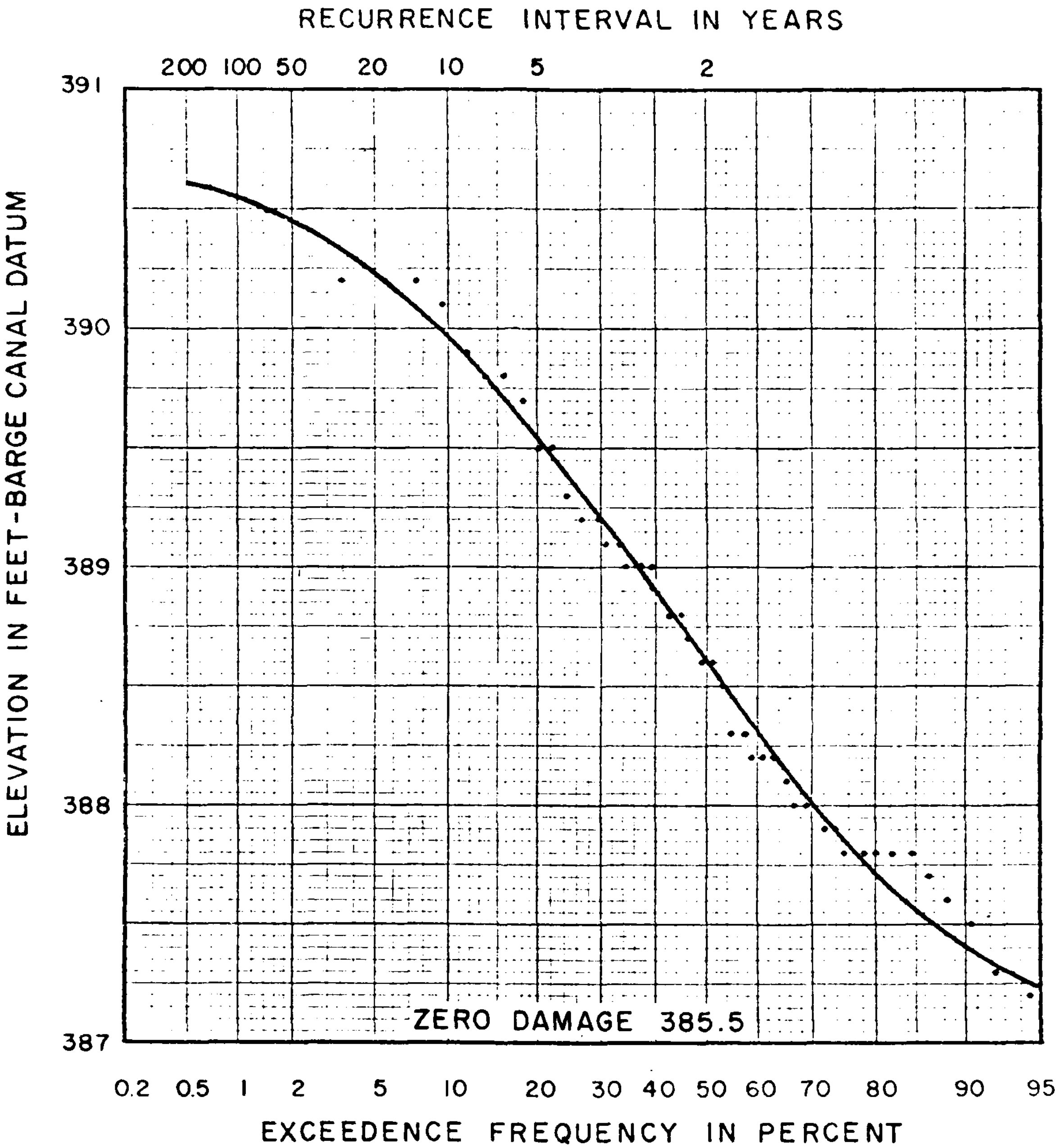
P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH C-1, C-2, & C-3
CLYDE RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 197?



NOTES:

P.O.R. 1925-1972 (48 YEARS).

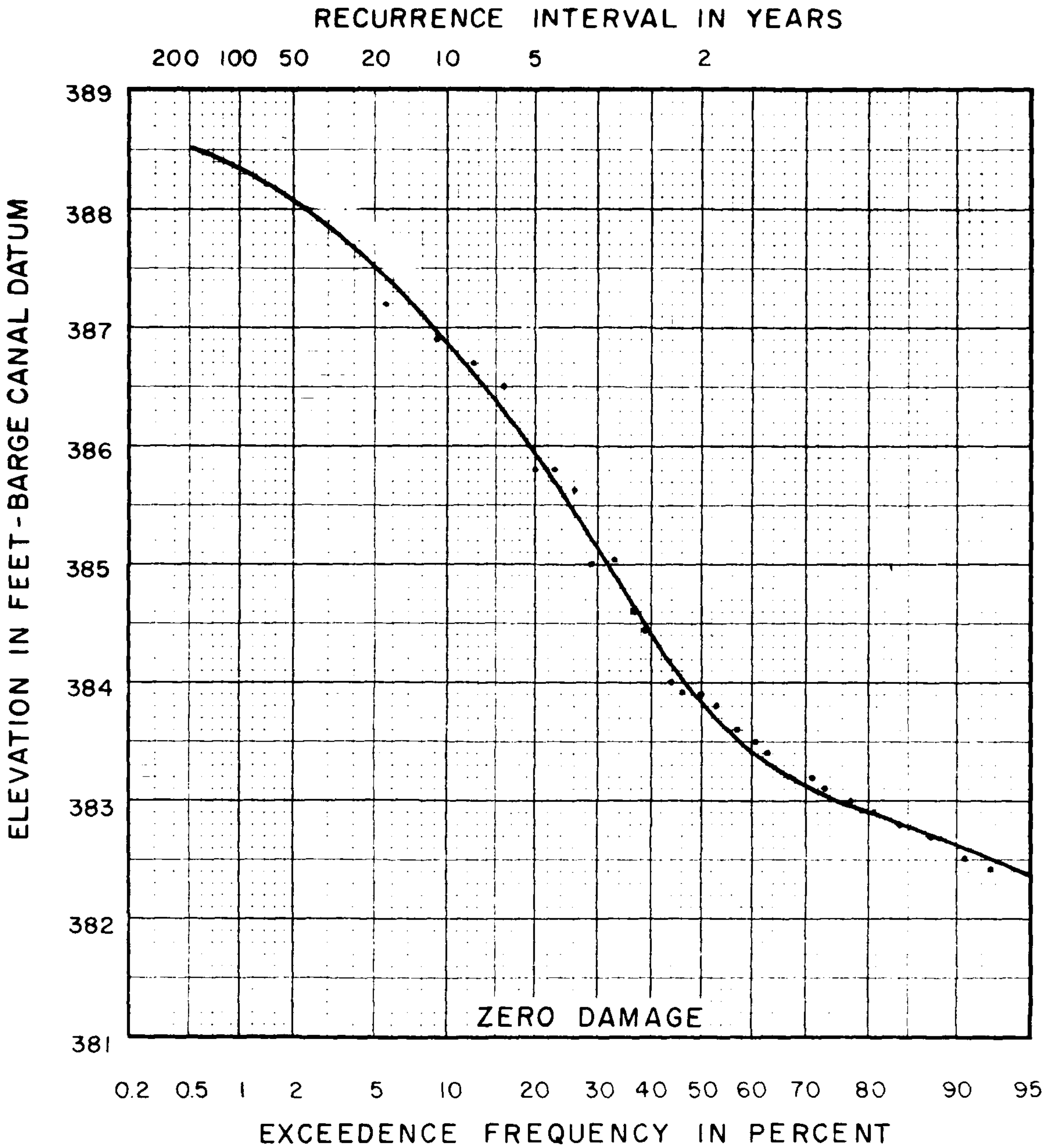
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH C-4
CLYDE RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



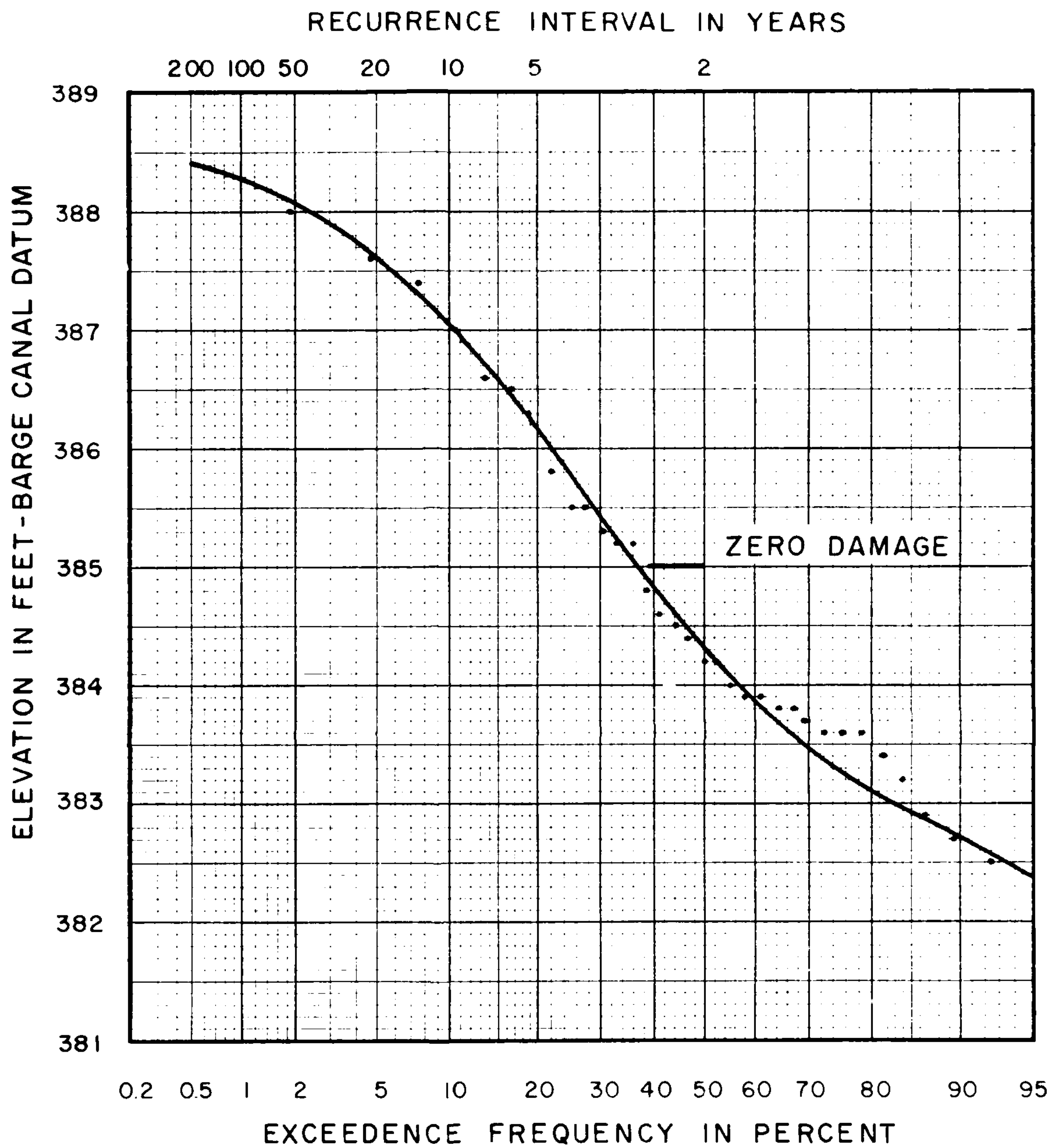
NOTES:

P.O.R. 1943-1972 (30 YEARS).
DOTS INDICATES PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH C-5
CLYDE RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

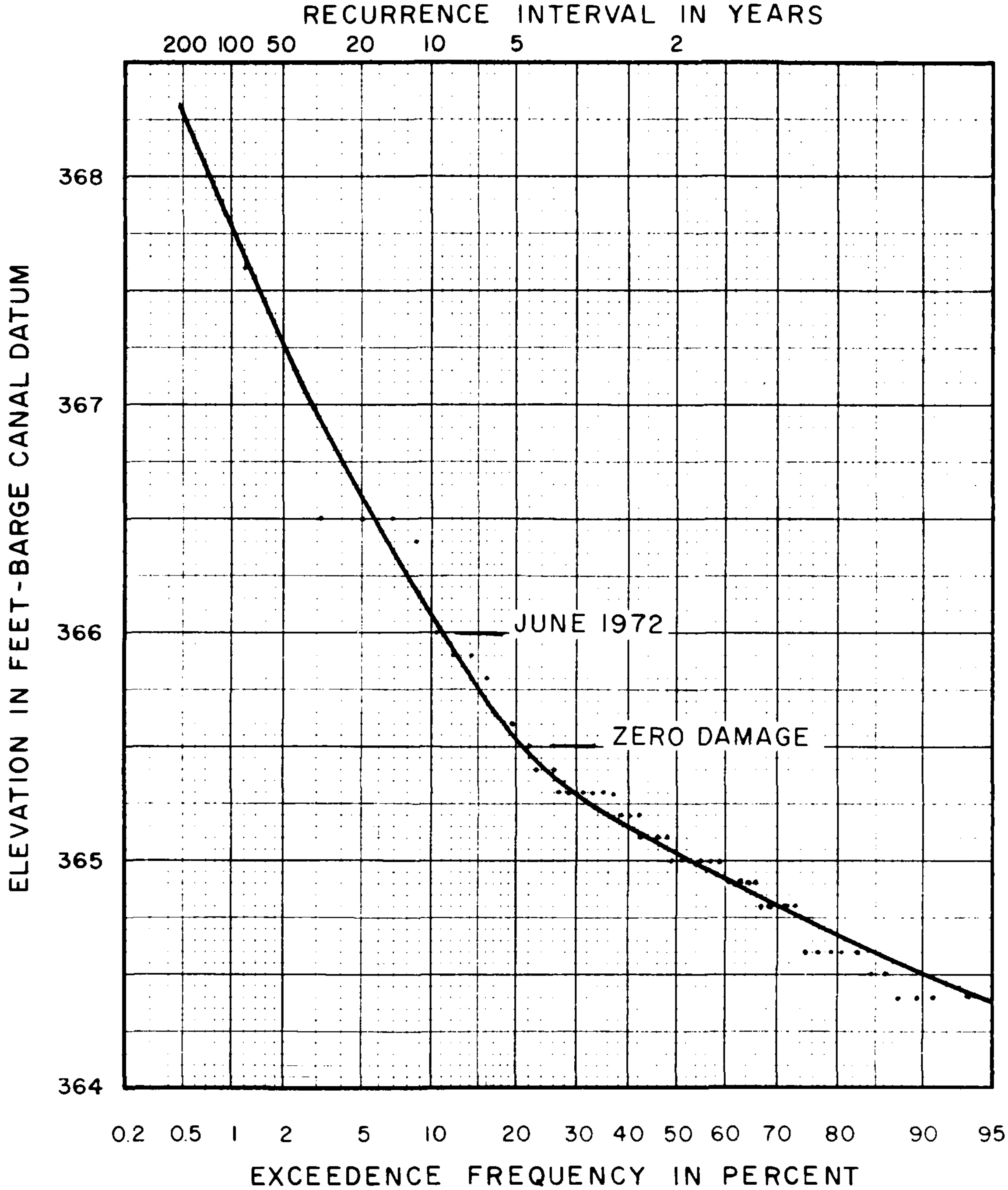


NOTES:

P.O.R. 1925-1972 (48 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH C-6
CLYDE RIVER
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

PLATE 69



NOTES:

P.O.R. 1912-1972 (61 YEARS)

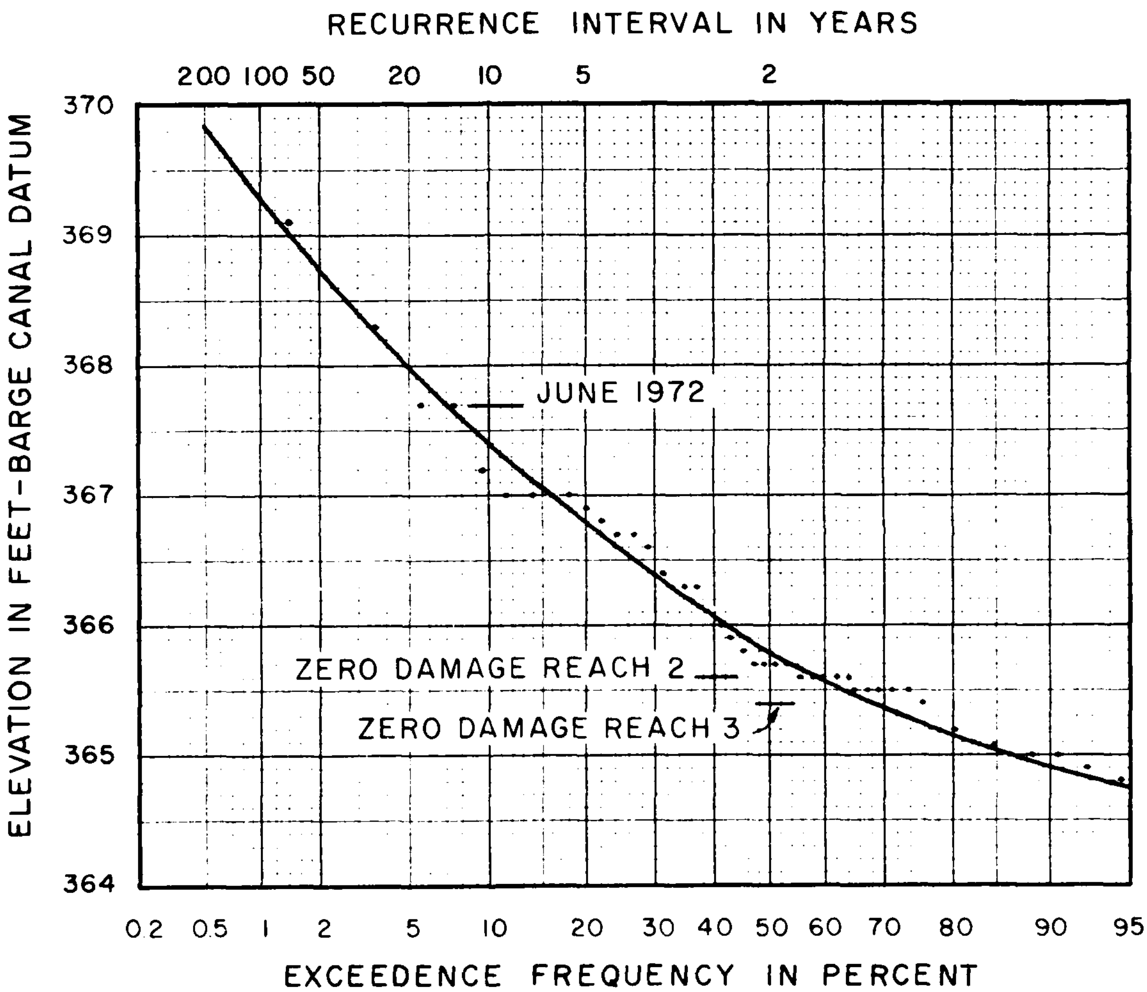
DOTS INDICATE PLOTTING POINTS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH 1
OSWEGO RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

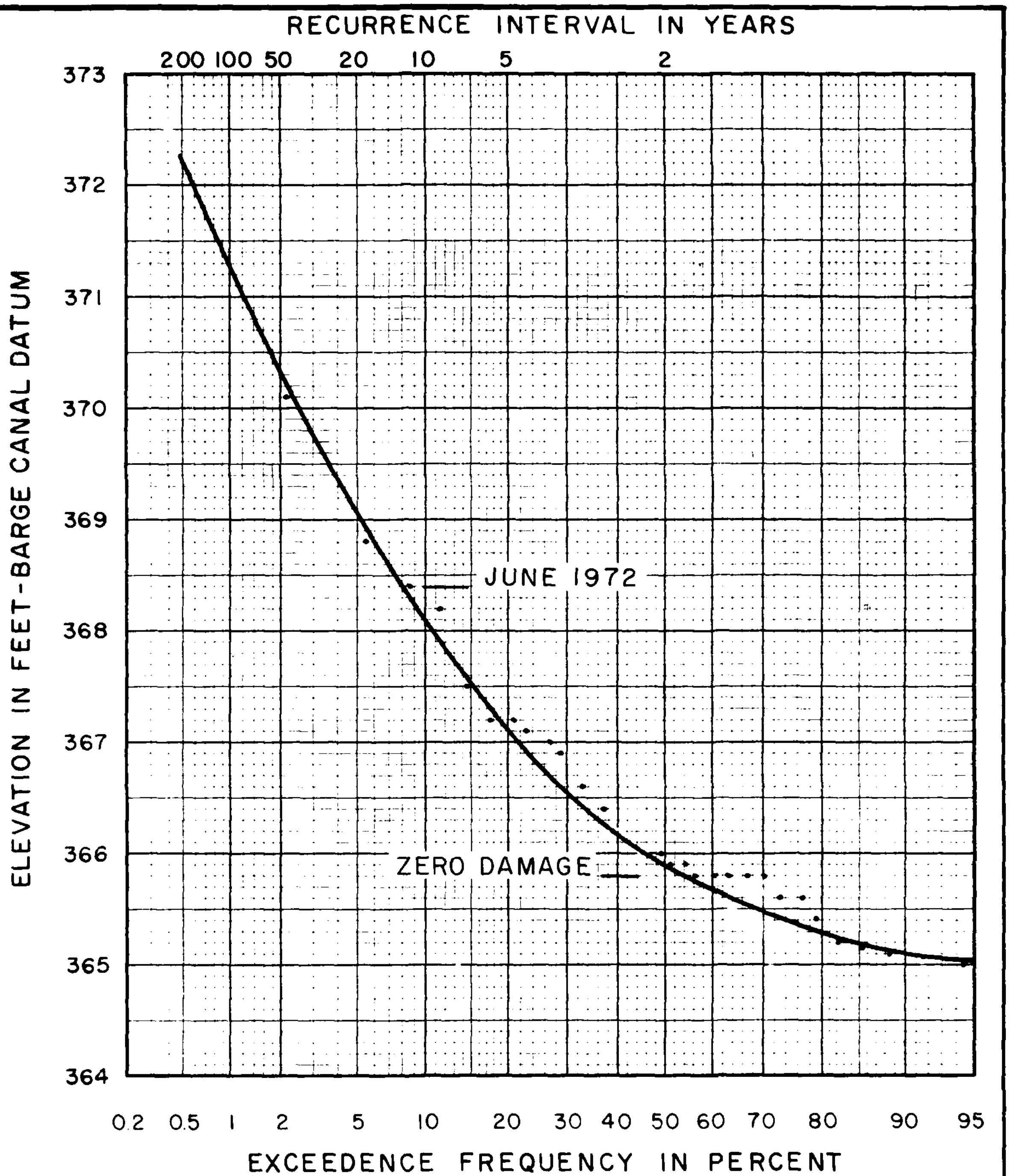
P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 2 AND 3
ONEIDA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

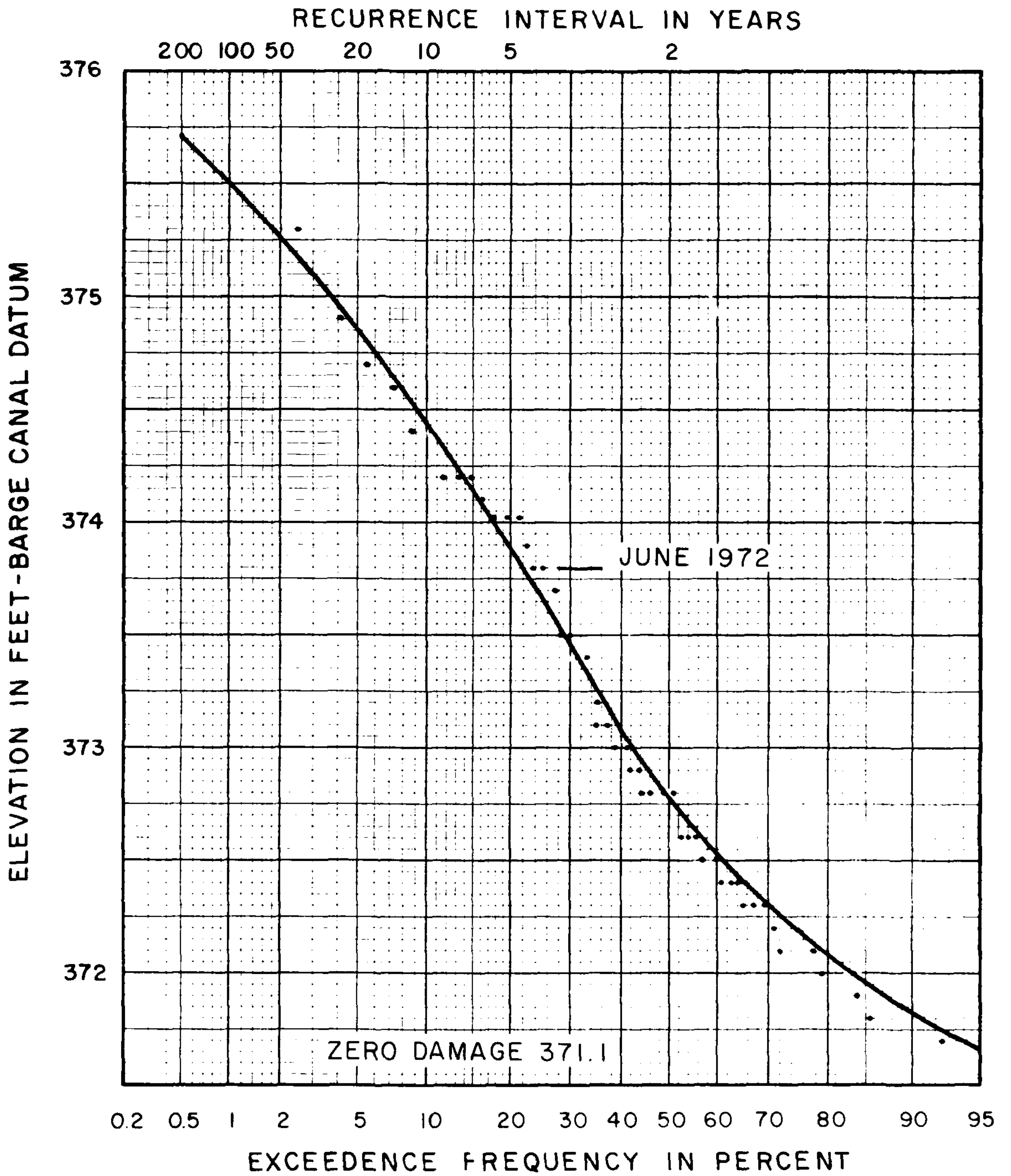
P.O.R. 1936-1972 (37 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH 5
ONEIDA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

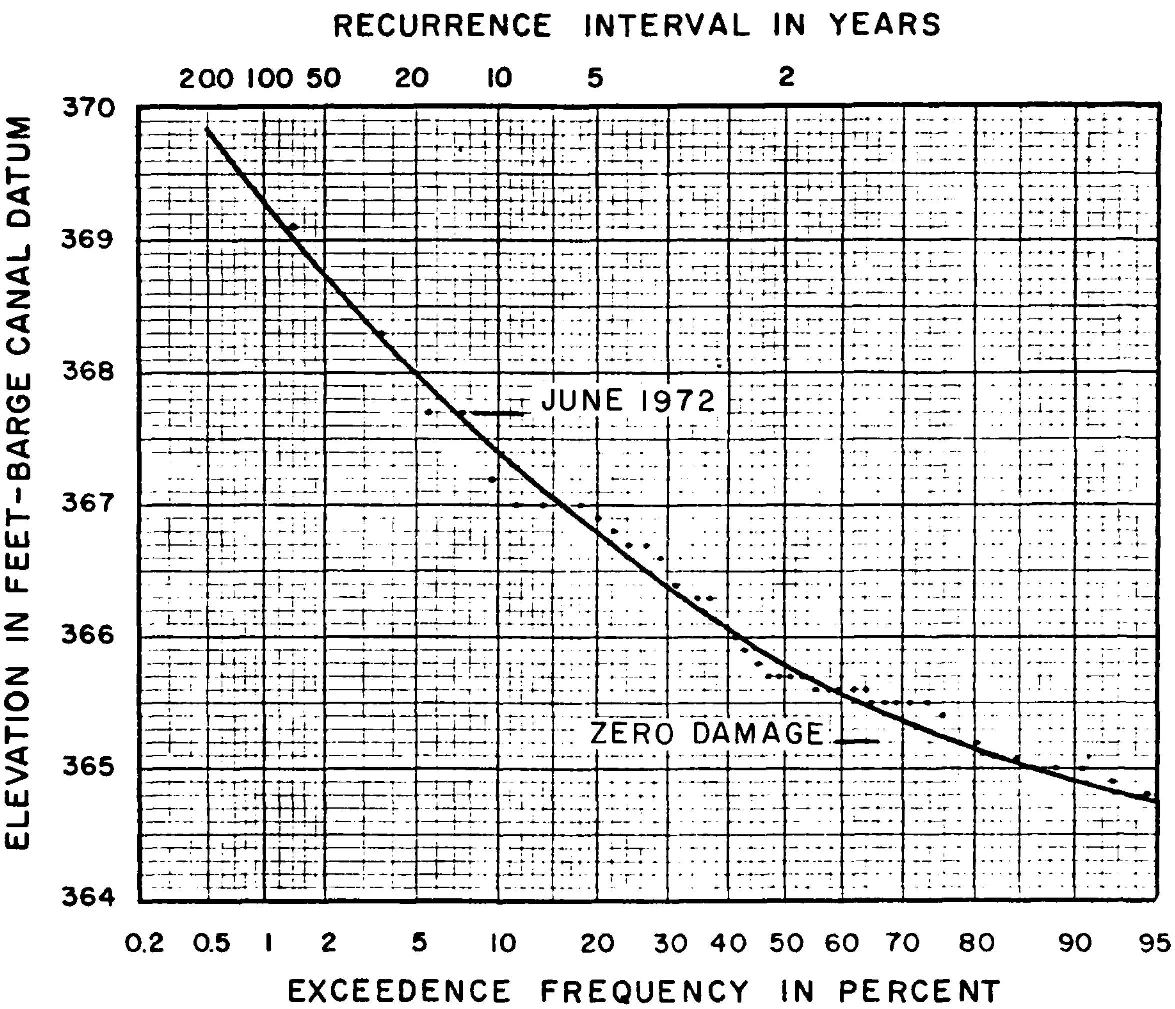
P.O.R. 1905-1972 (68 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 6
ONEIDA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

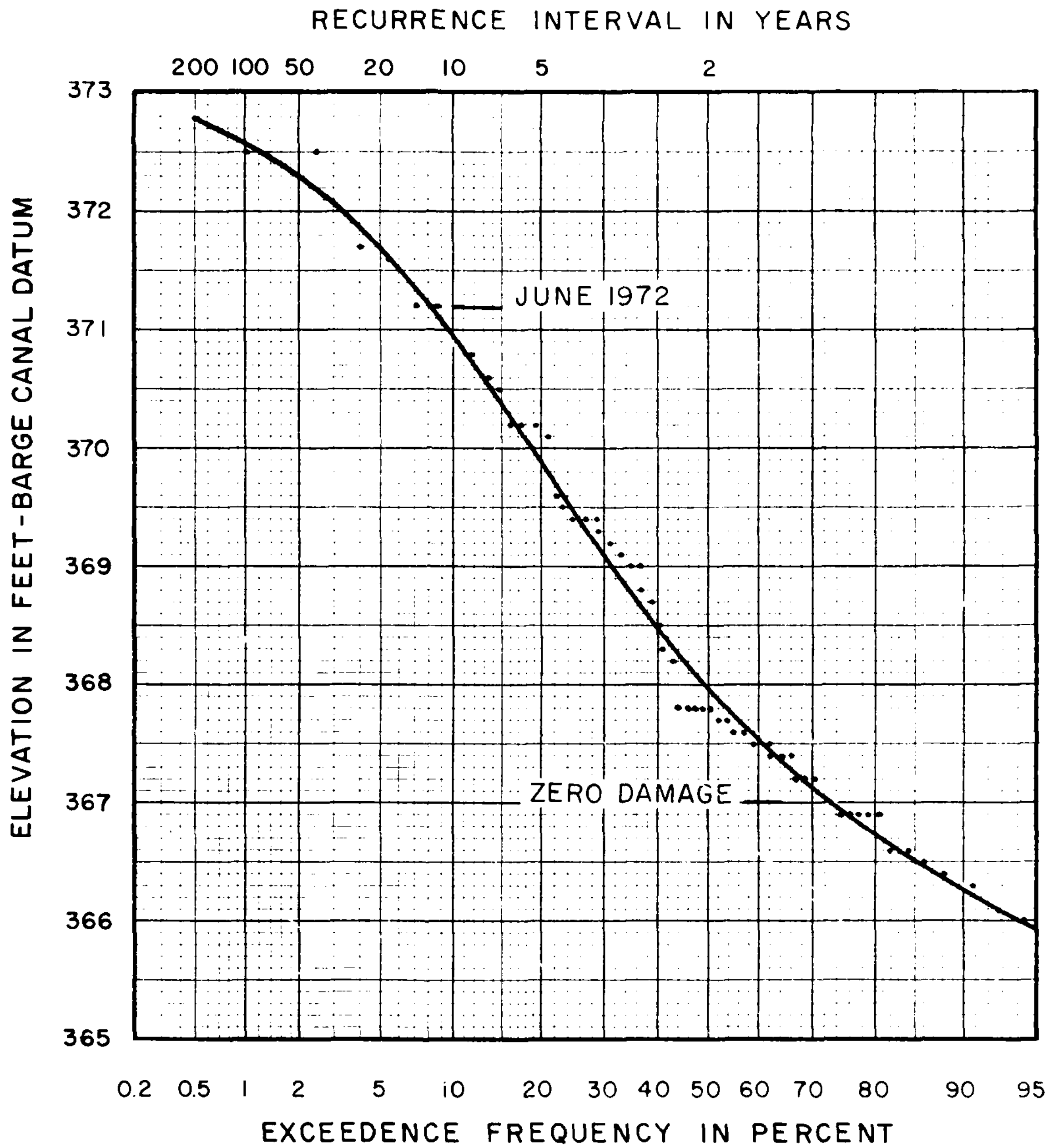


NOTES:

P. O. R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH 7
SENECA RIVER
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

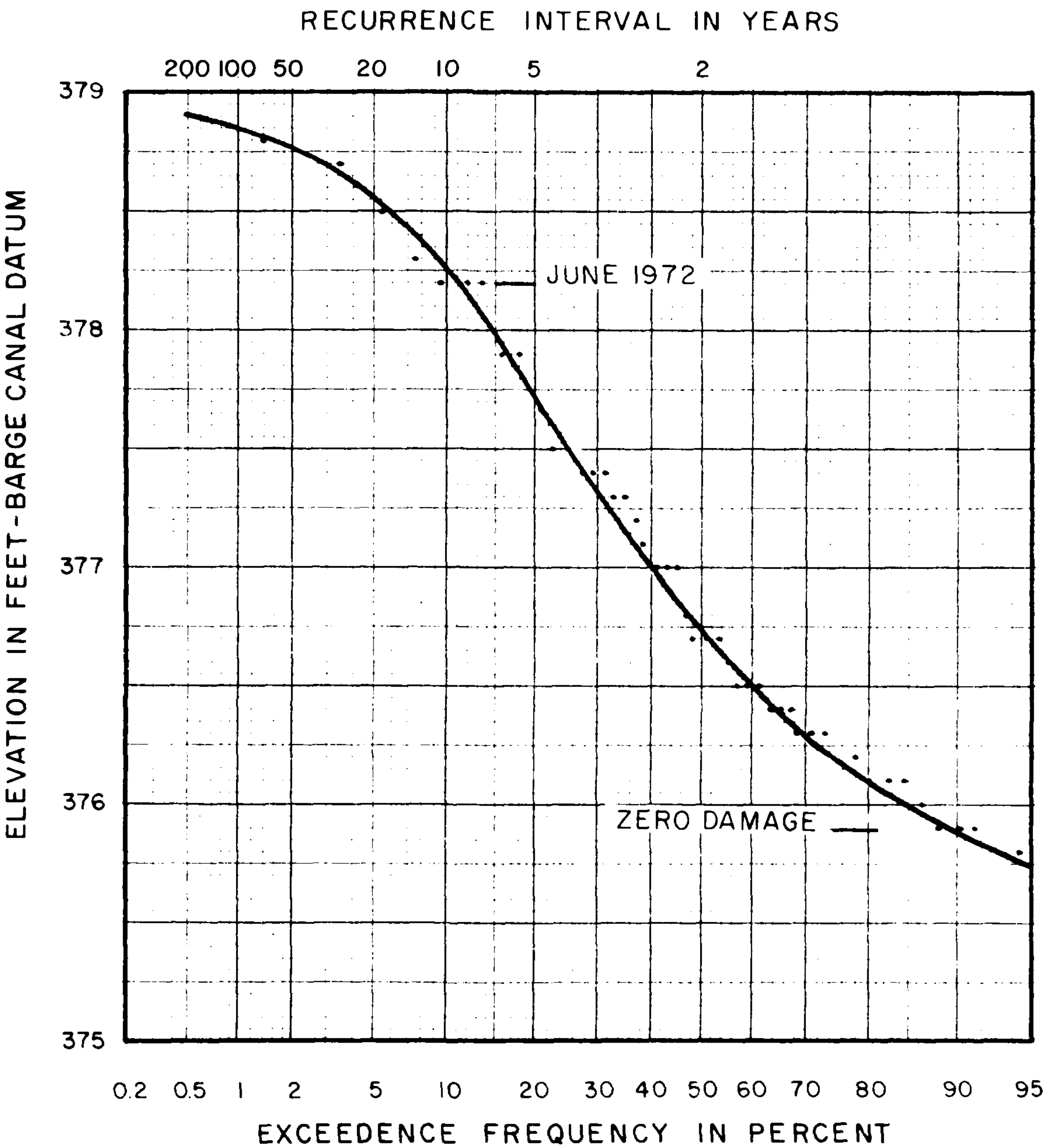
P.O.R. 1904–1972 (69 YEARS)

DOTS INDICATE PLOTTING POINTS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 8
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

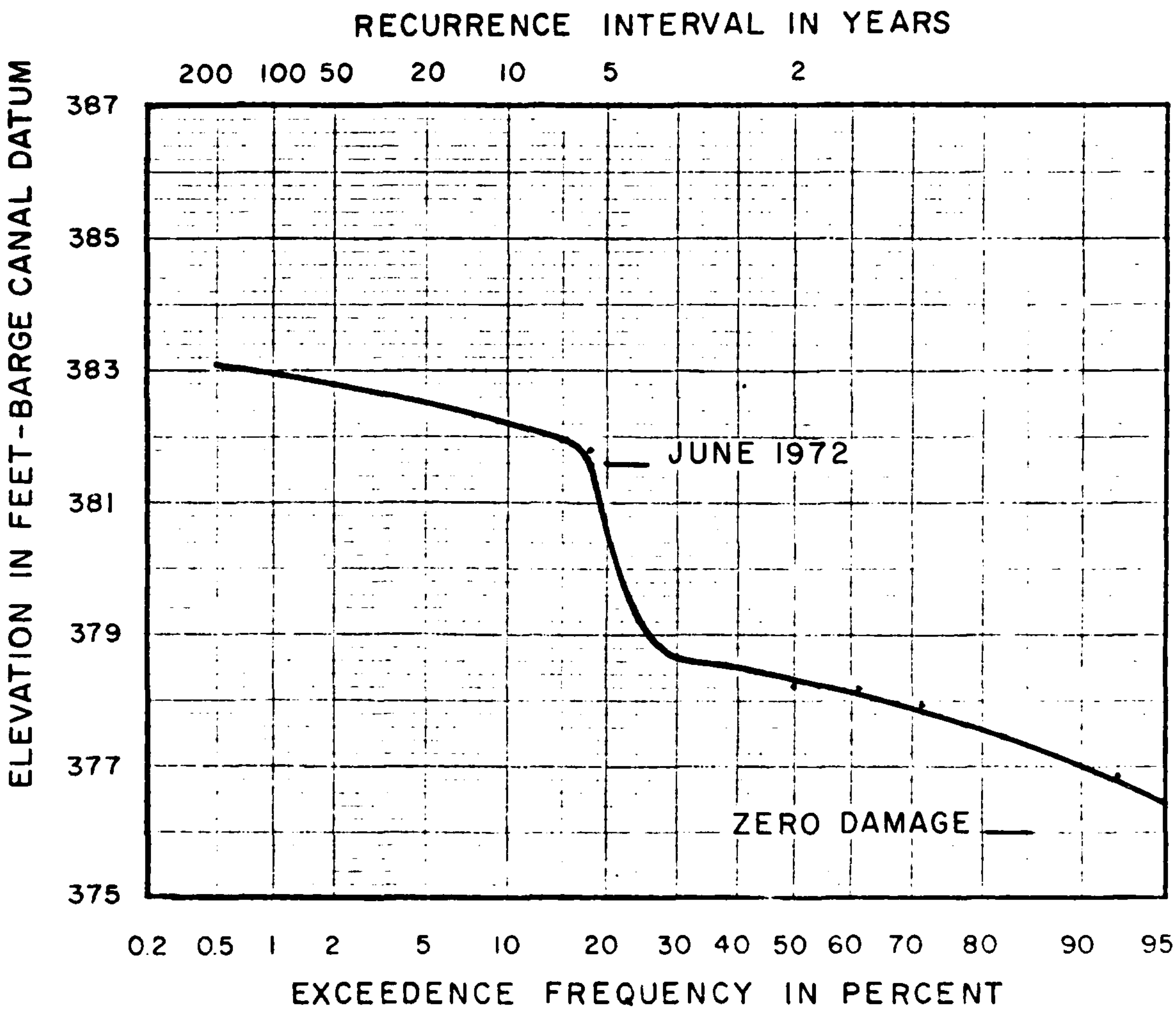
P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 9
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

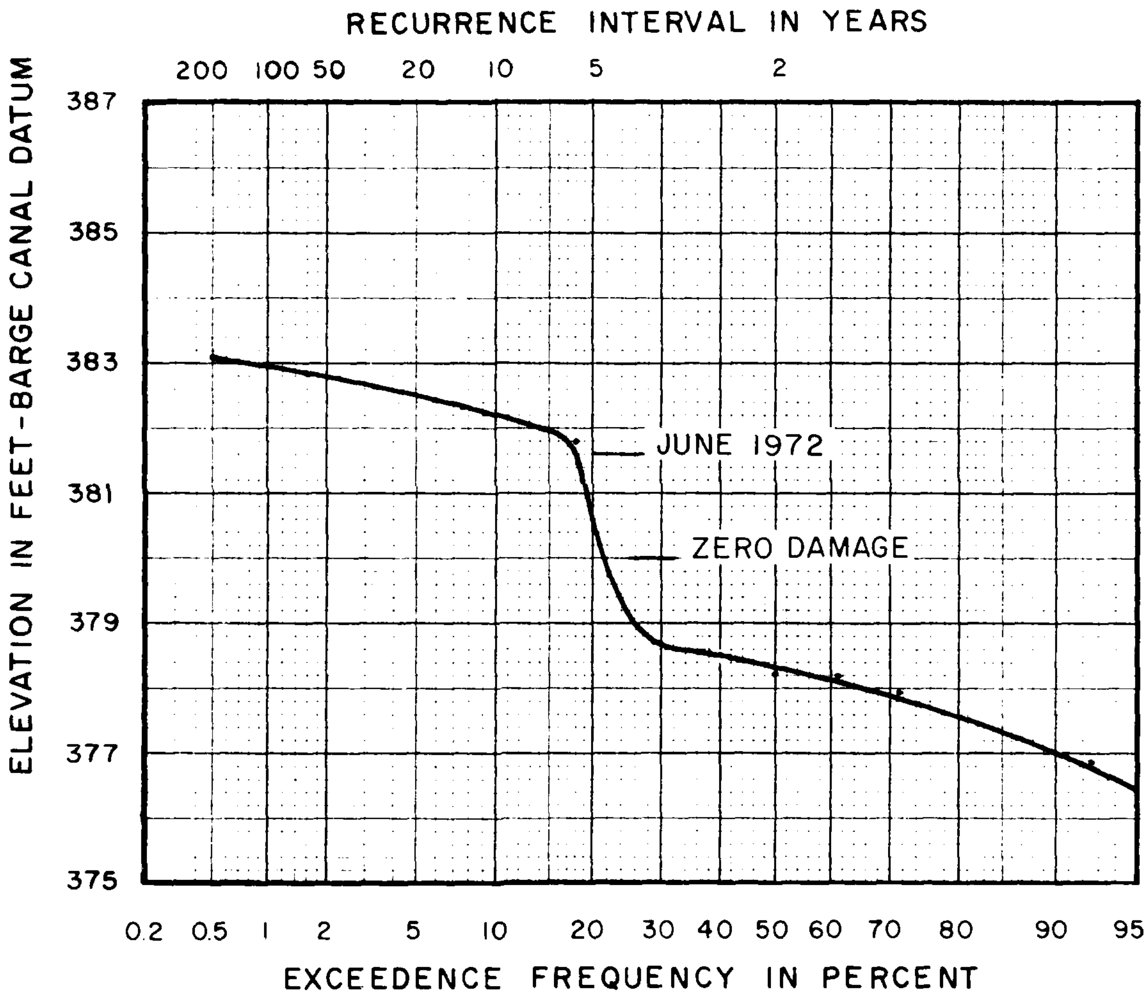
P.O.R. 1933-1941 (9 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 10
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

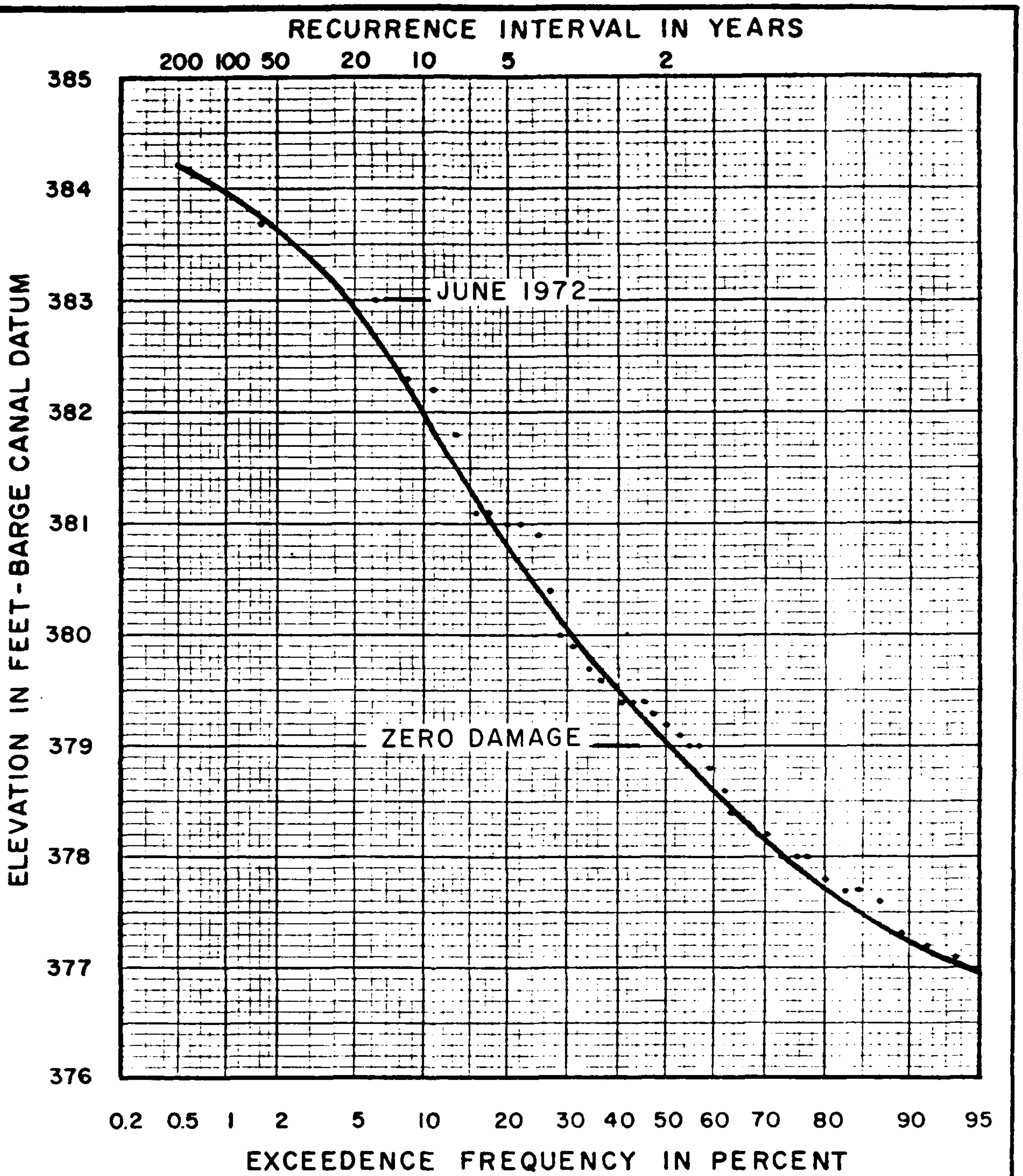


NOTES:
P.O.R. 1933-1941 (9 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH II
STATE DITCH

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P. O. R. 1936-1972 (37 YEARS).

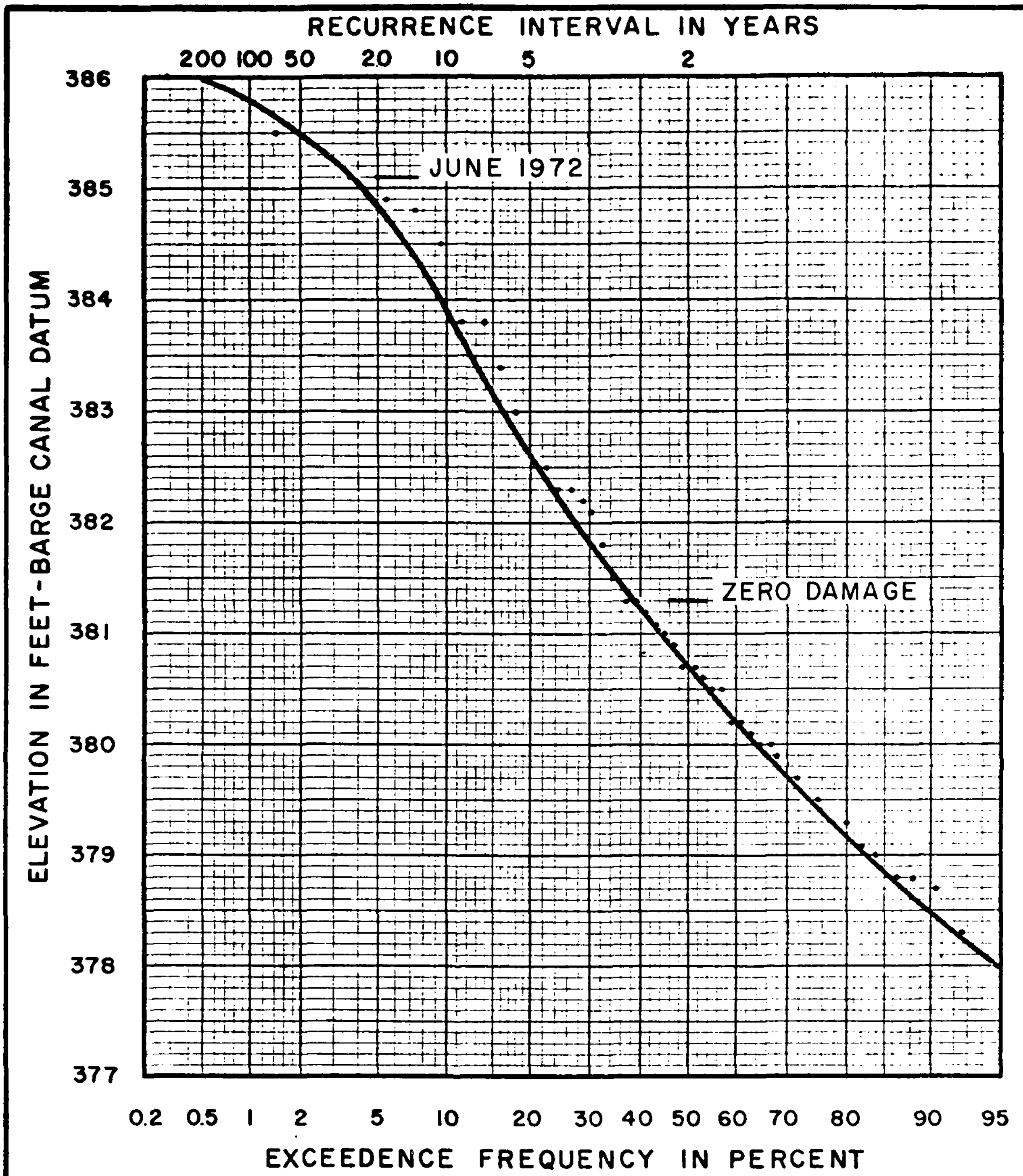
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH 12
SENECA RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

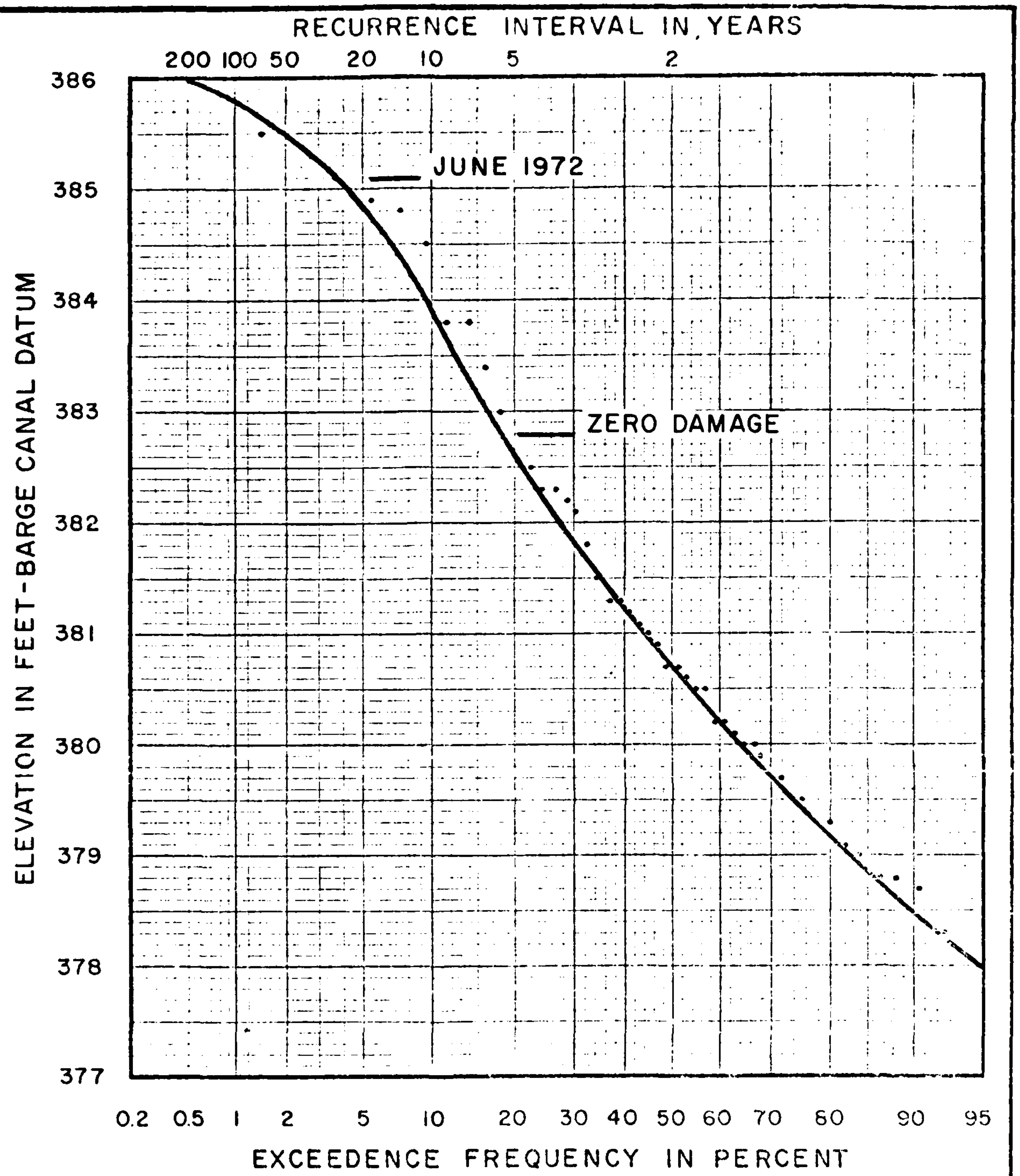


NOTES:

P. O. R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH 13
BARGE CANAL
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

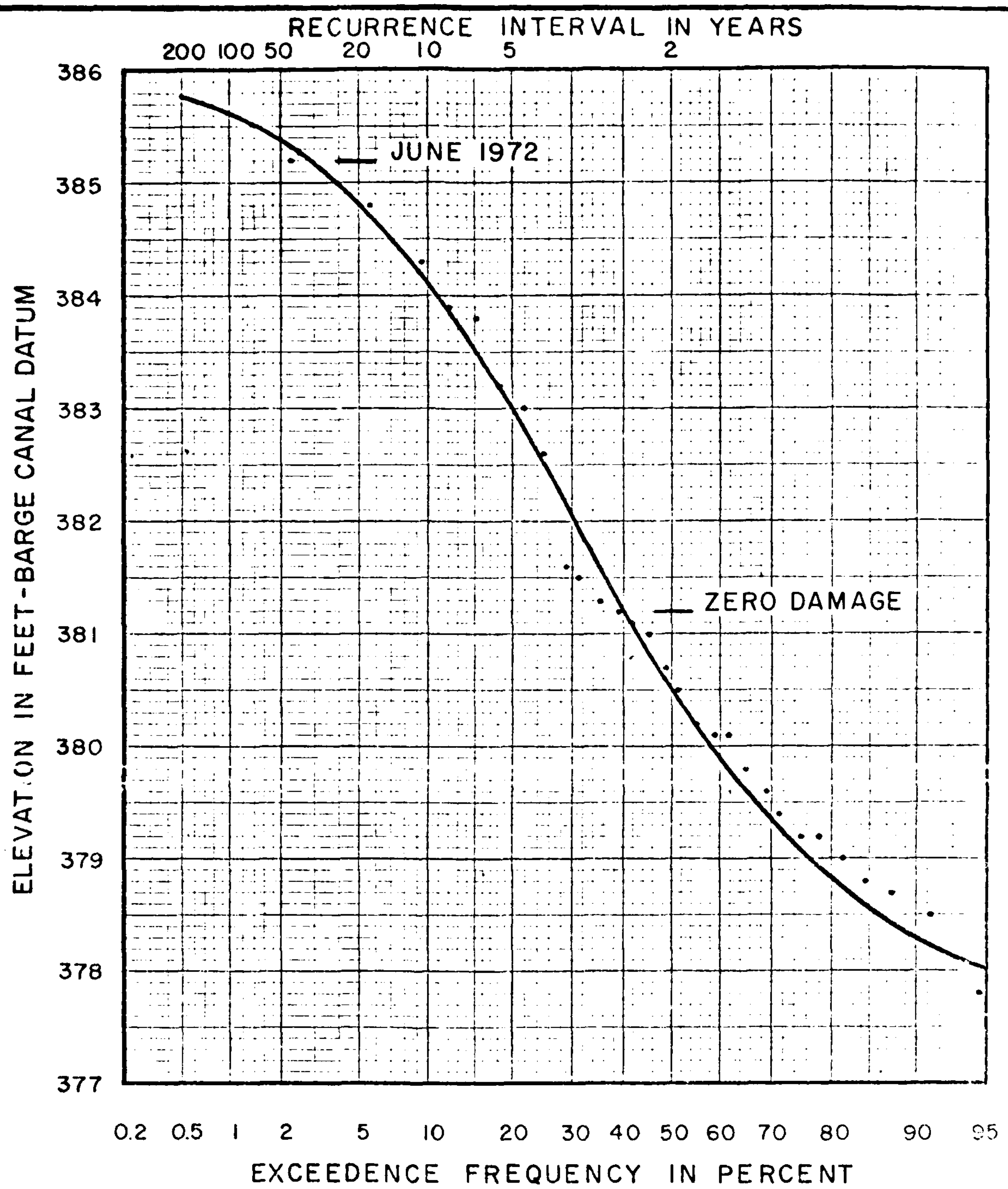
P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 14
SENECA RIVER

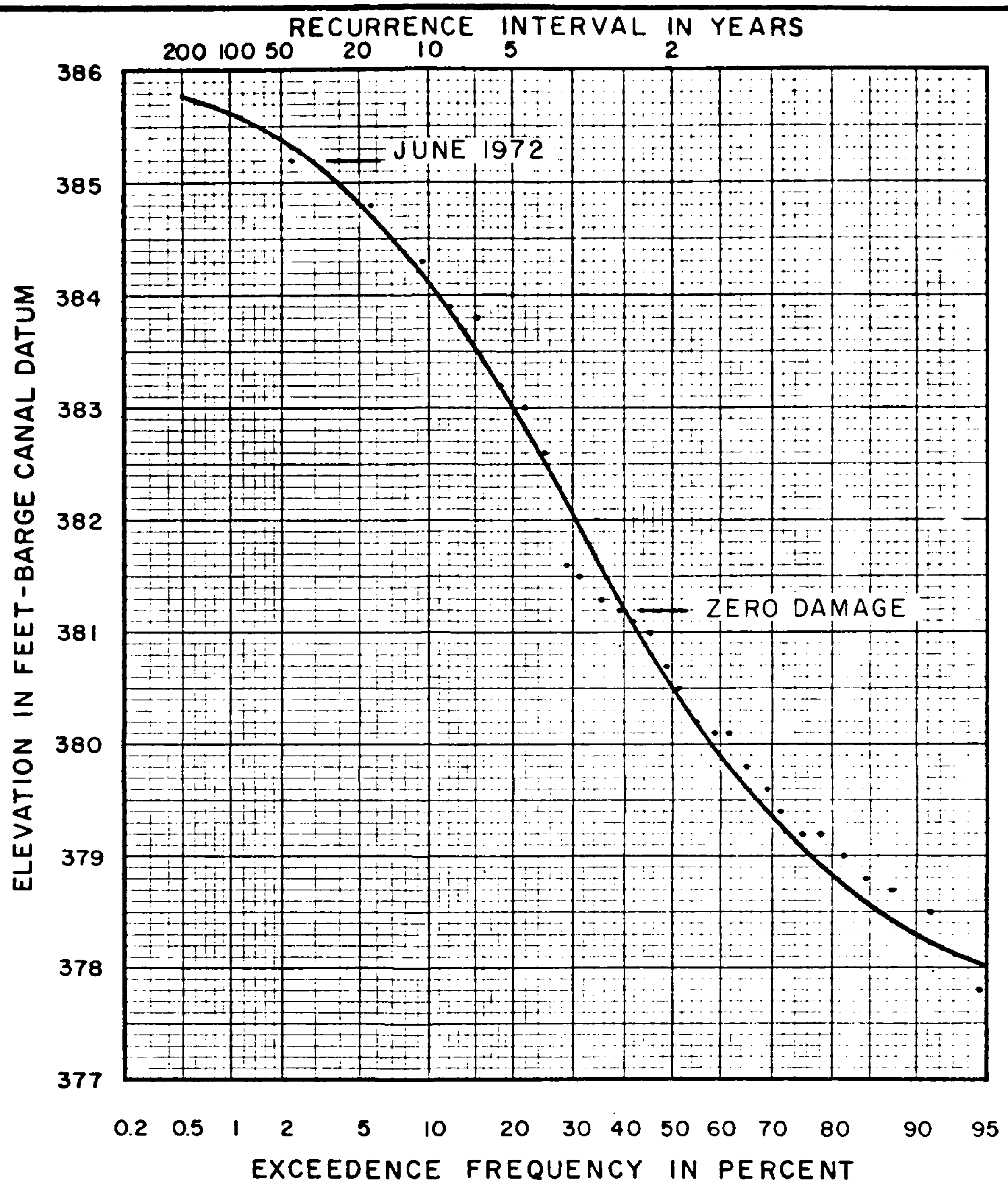
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P.O.R. 1943-1972 (30 YEARS)
DOTS INDICATE PLOTTING POINTS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-FREQUENCY CURVE
REACH 15
BARGE CANAL
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



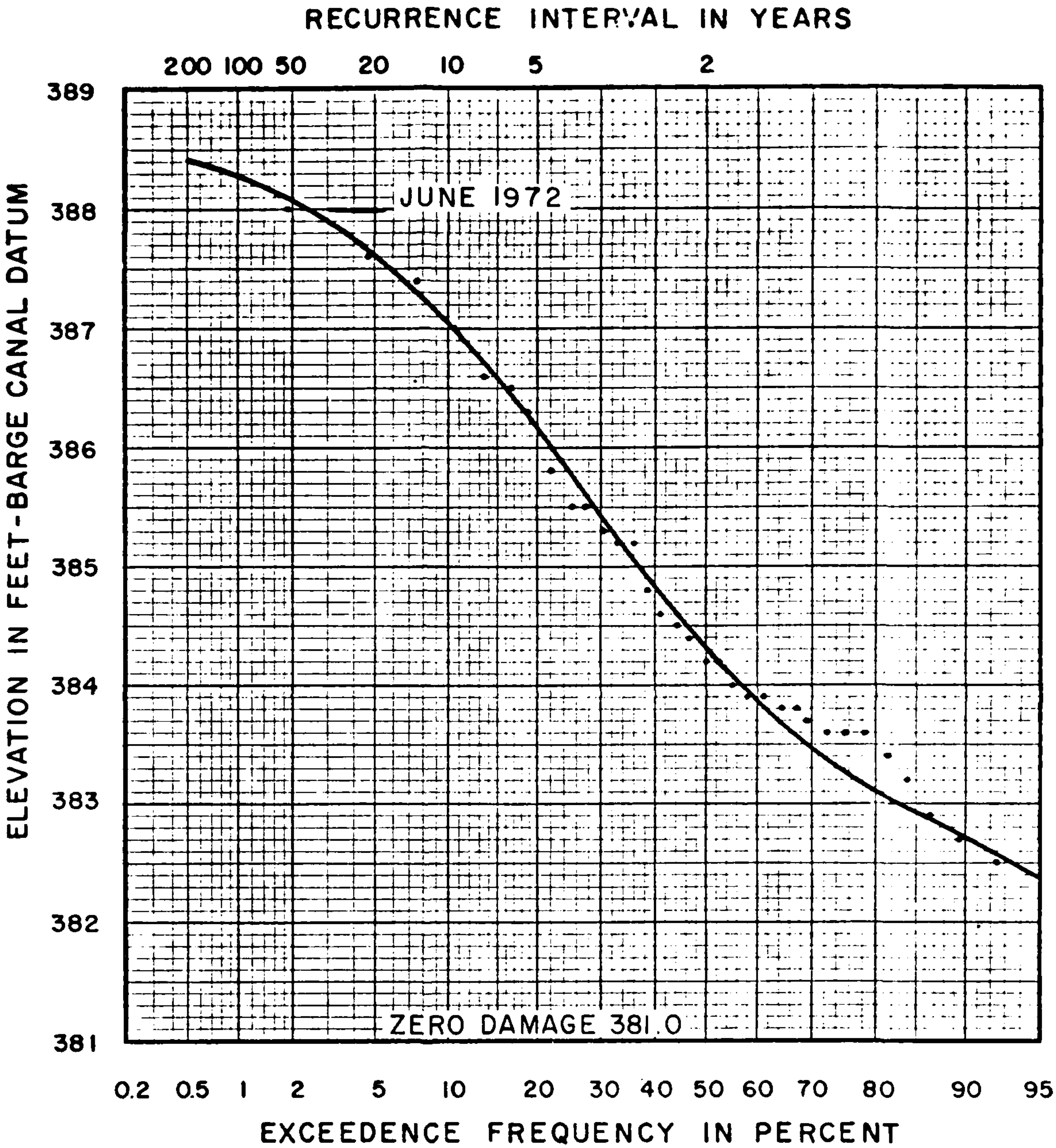
NOTES:

P.O.R. 1943–1972 (30 YEARS)
DOTS INDICATE PLOTTING POINTS

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH 16
CLYDE RIVER
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

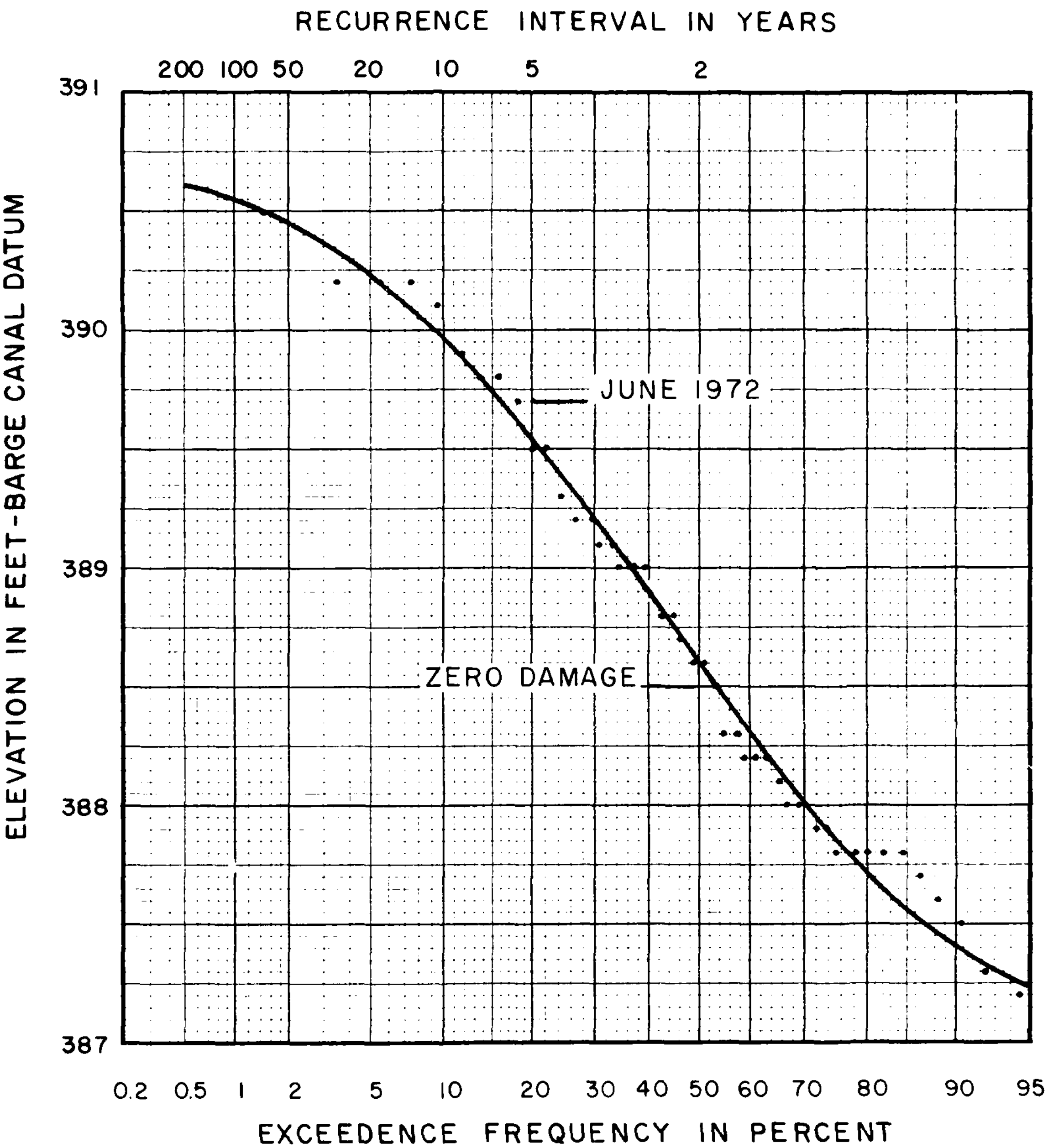
P.O.R. 1925-1972 (48 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH 17
CLYDE RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P.O.R. 1925-1972 (48 YEARS).

DOTS INDICATE PLOTTING POINTS.

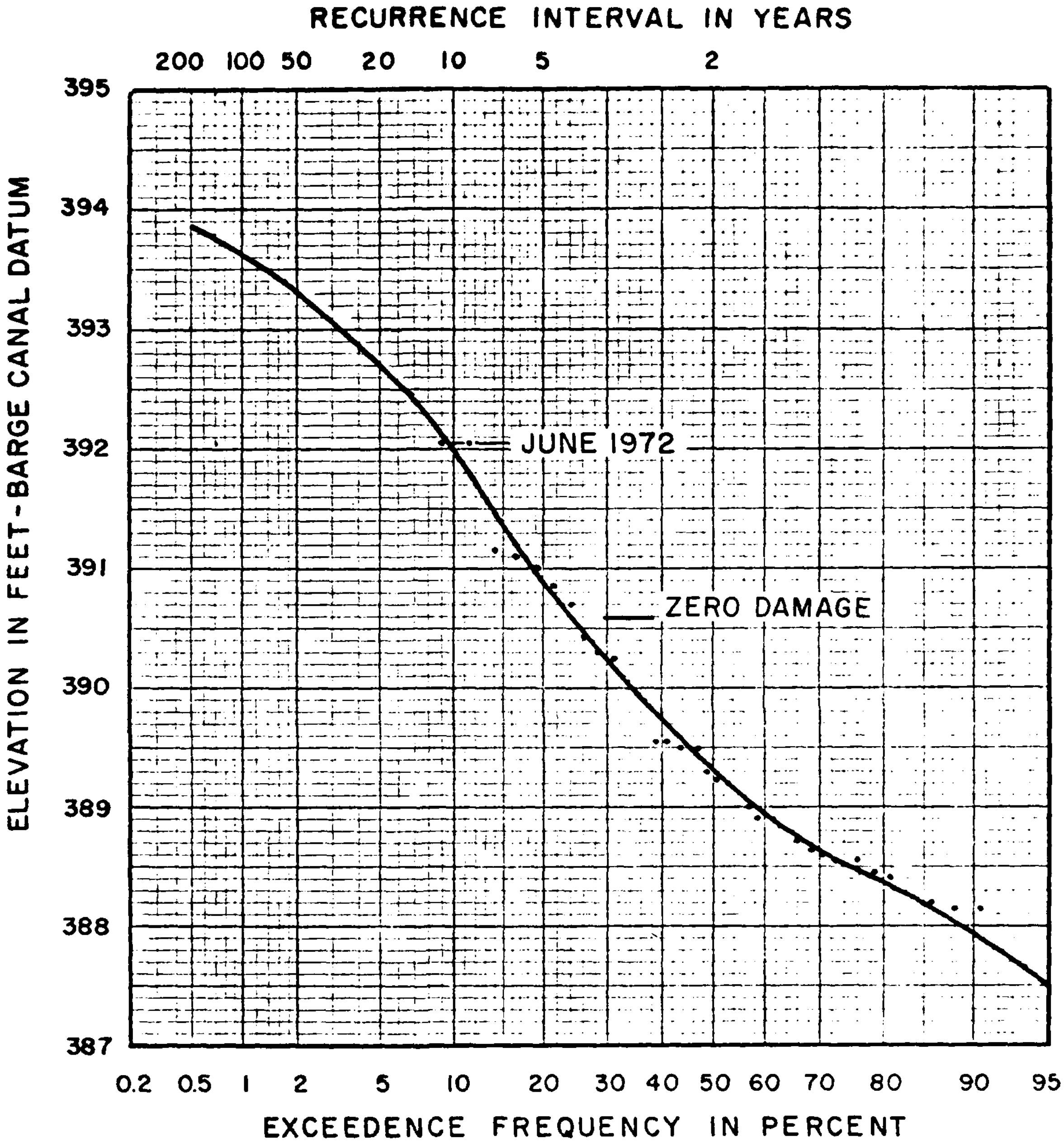
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH 18

CLYDE RIVER AND BARGE CANAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



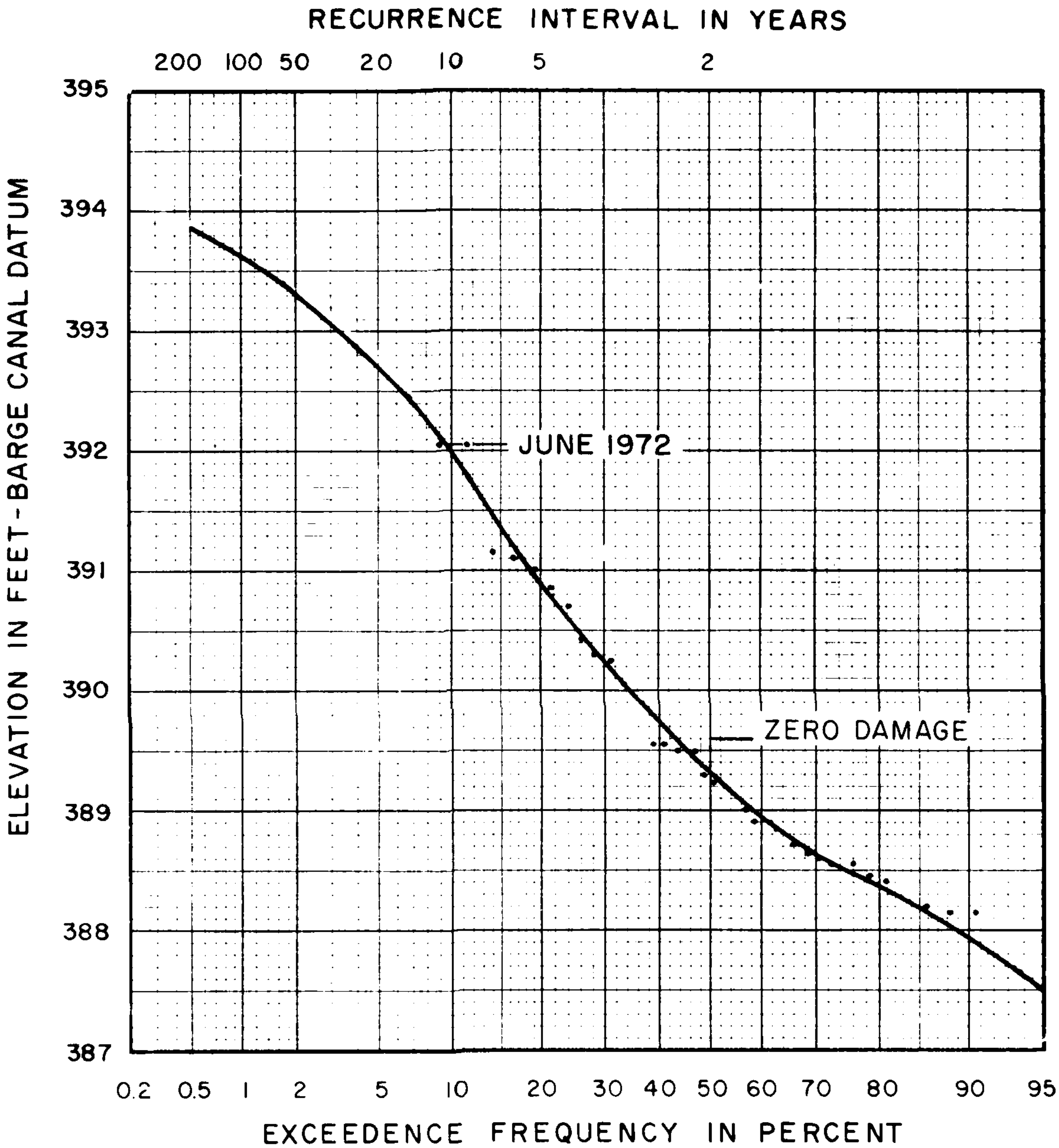
NOTES:

P.O.R. 1925-1972 (48 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 19
BARGE CANAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



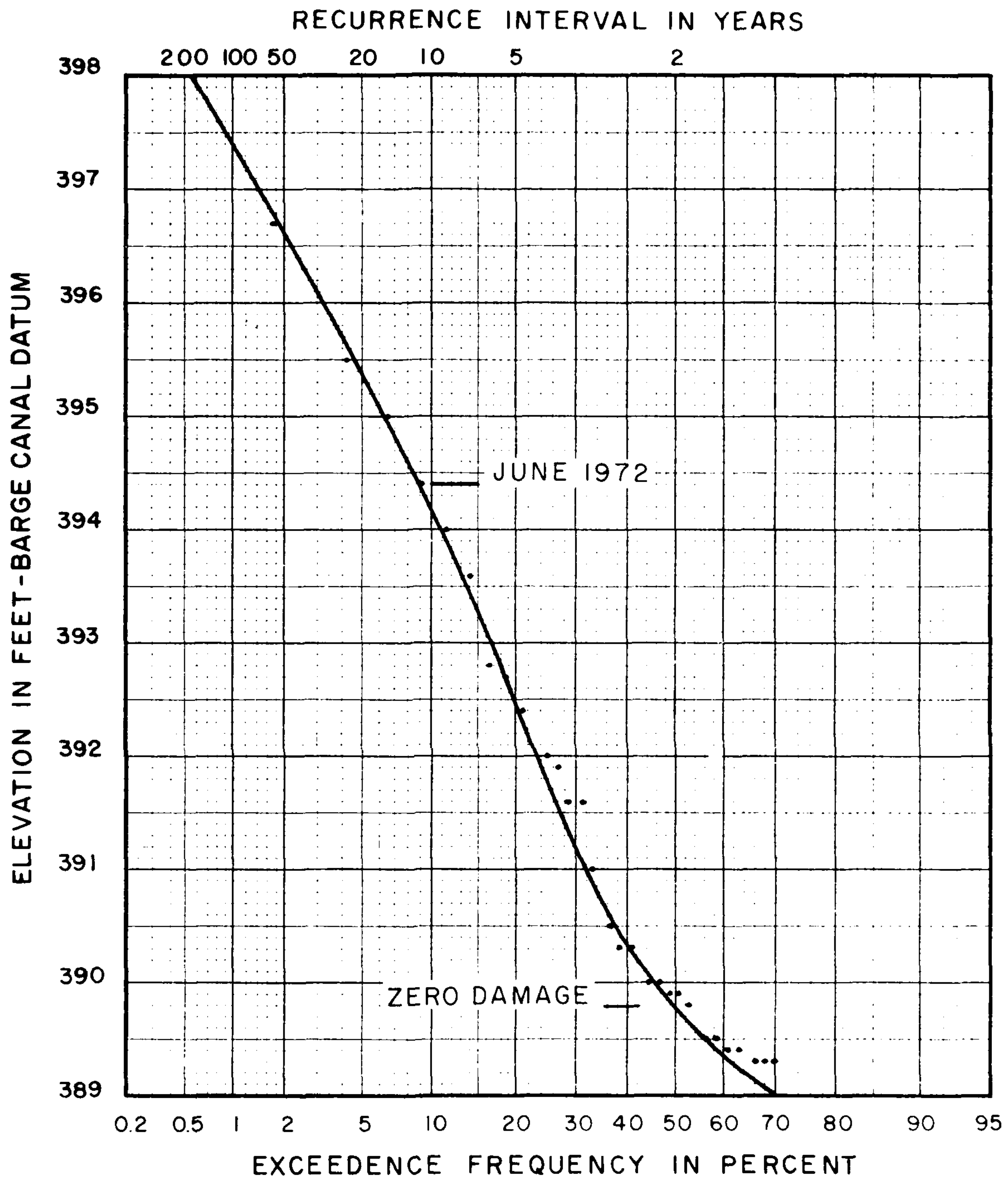
NOTES:

P.O.R. 1925-1972 (48 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 20
CLYDE RIVER

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P.O.R 1925-1972 (48 YEARS).

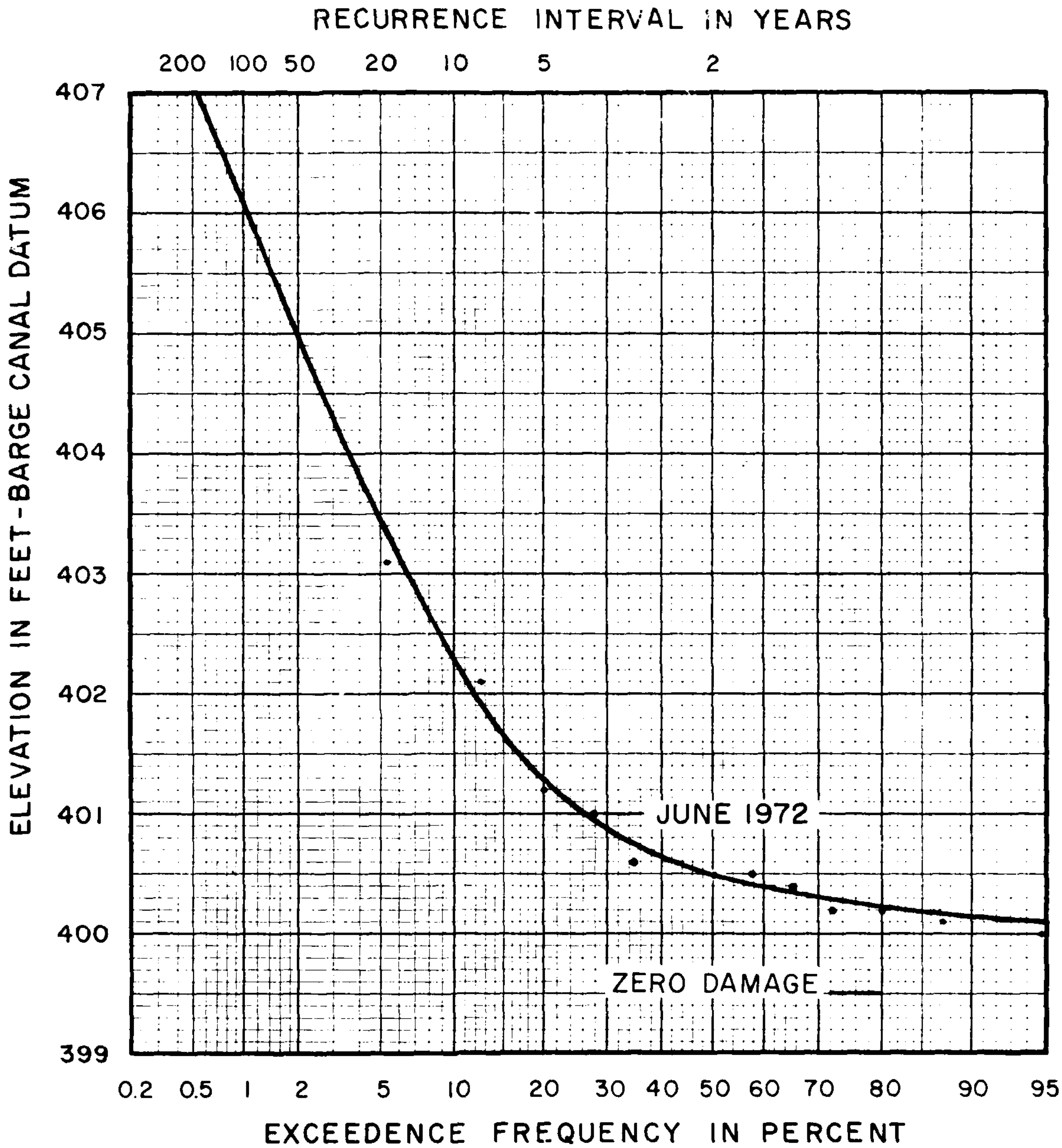
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE

REACH 21
BARGE CANAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

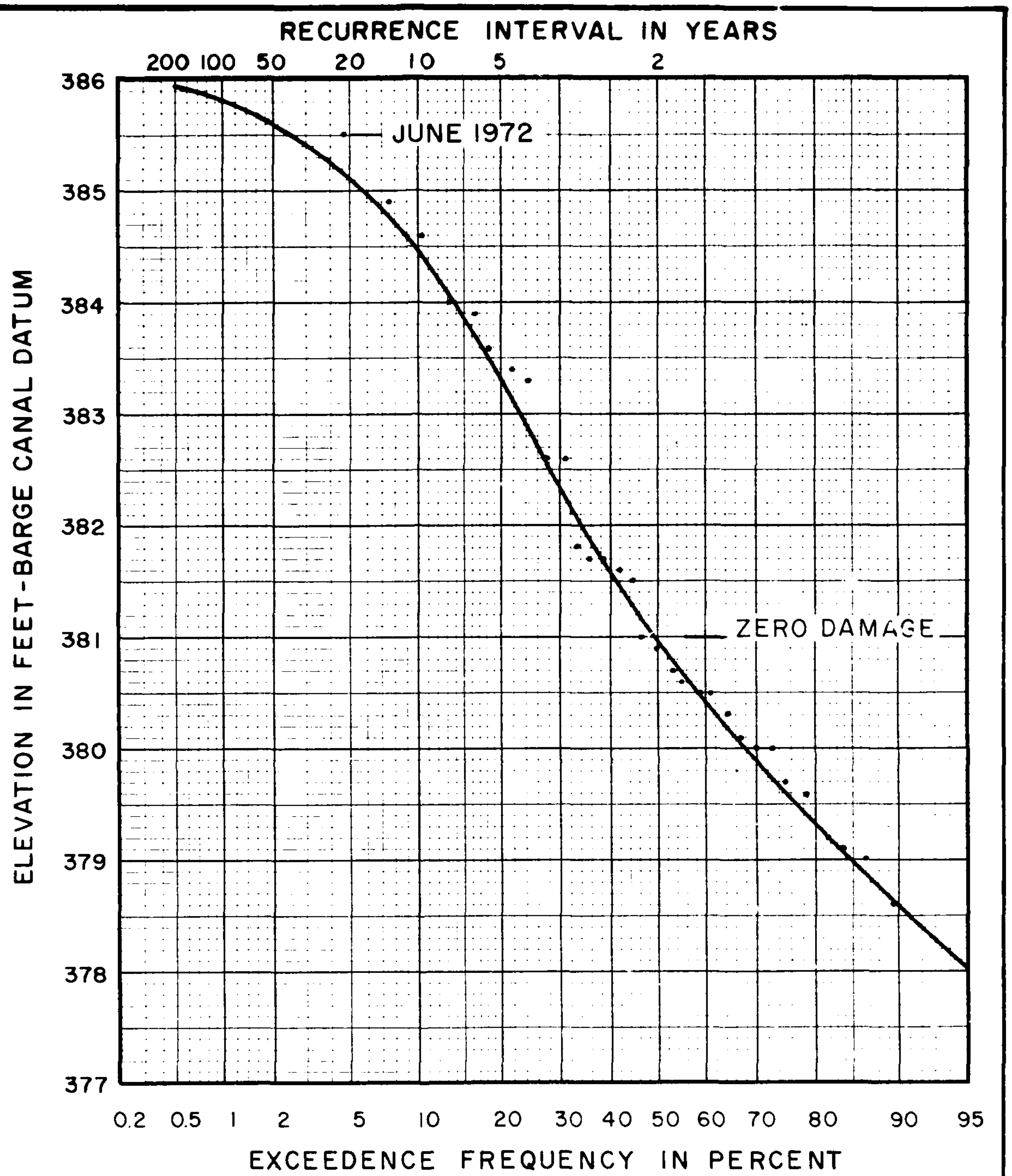


NOTES:
P.O.R. 1925-1968 (44 YEARS)
DOTS INDICATE PLOTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 22
GANARGUA CREEK

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

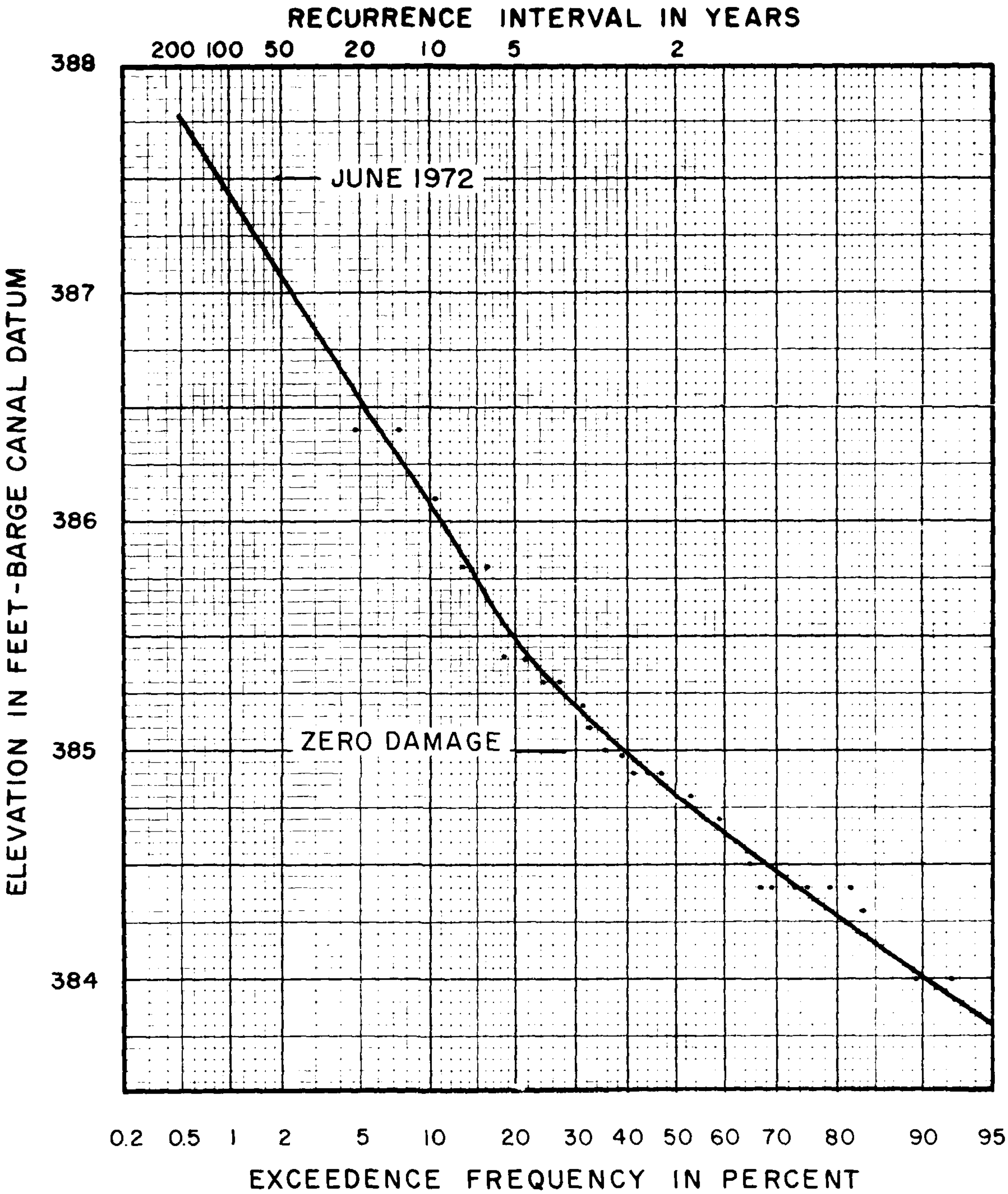


NOTES:
P.O.R. 1925-1972 (48 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 26
CAYUGA-SENECA CANAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

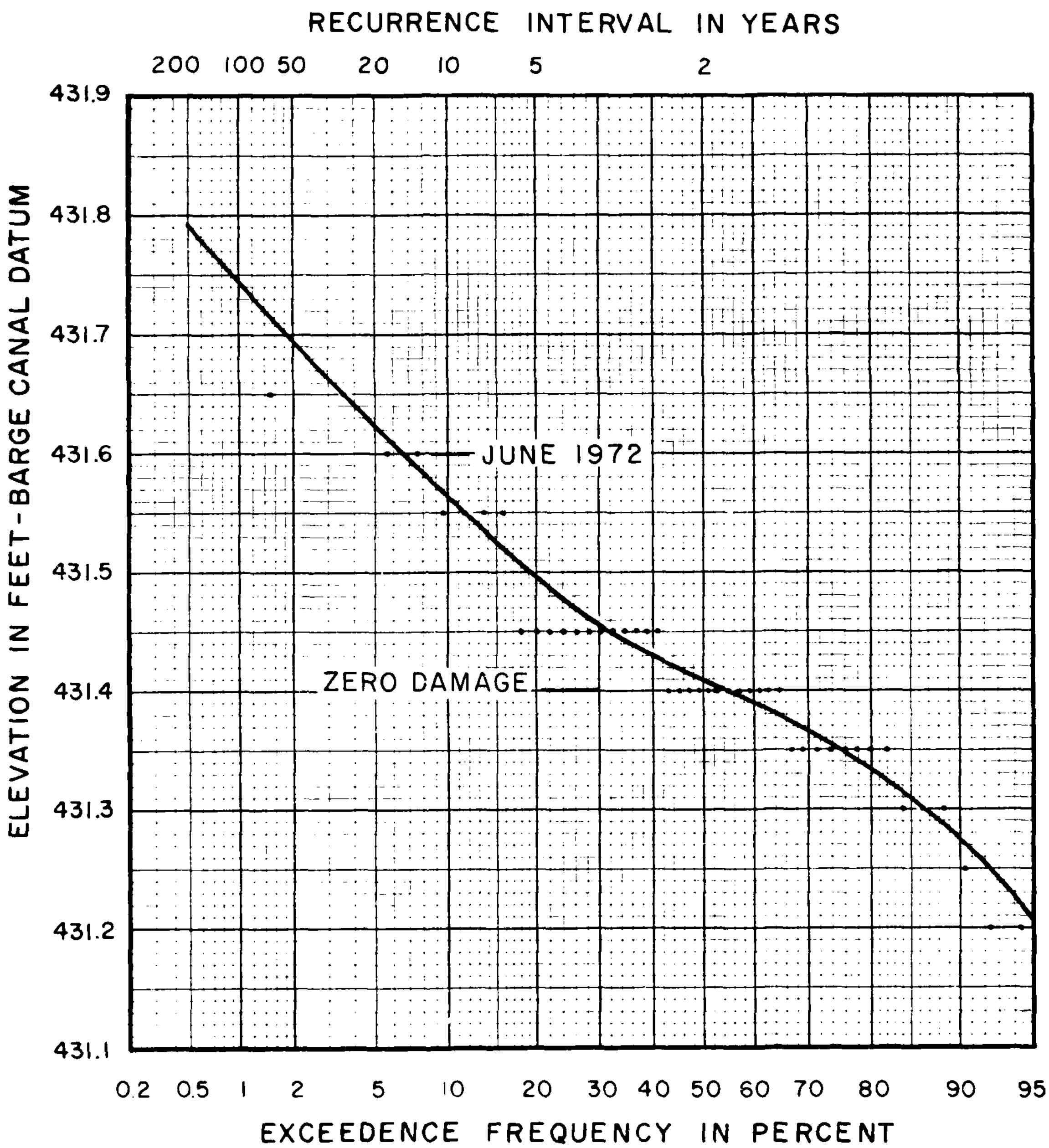


NOTES:
P.O.R. 1925-1972 (48 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 27
CAYUGA-SENECA CANAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



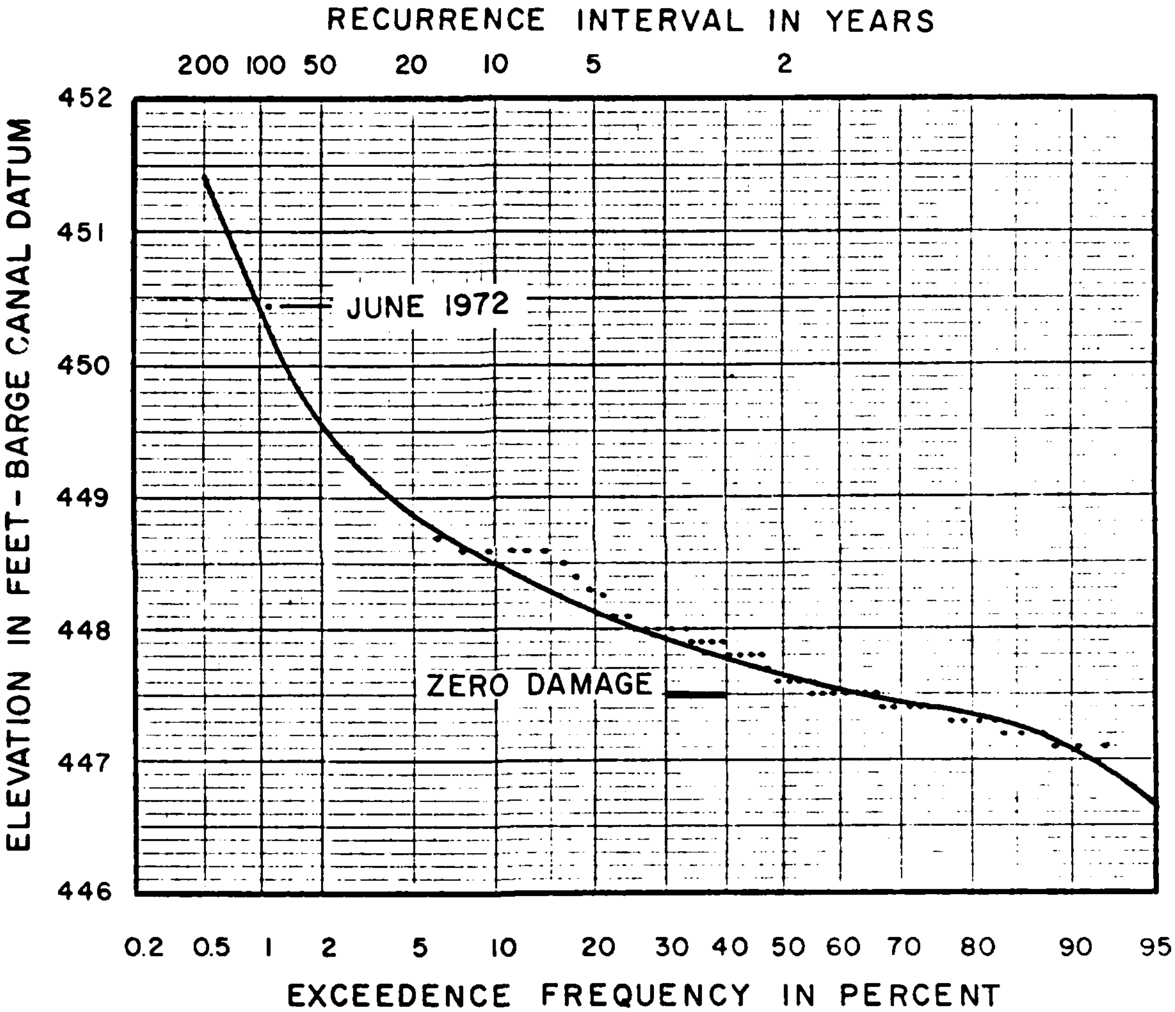
NOTES:

P. O. R. 1925-1972 (48 YEARS)
DOTS INDICATE PLOTTING POINTS.

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-FREQUENCY CURVE
REACH 28
CAYUGA-SENECA CANAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

P.O.R. 1913-1972 (60 YEARS). U.S.G.S. CONTINUOUS RECORDING GAGE THIS LOCATION FROM 1957 TO PRESENT. ALL OTHER STAGES ARE DAILY READINGS FROM THE BARGE CANAL GAGE THIS LOCATION.

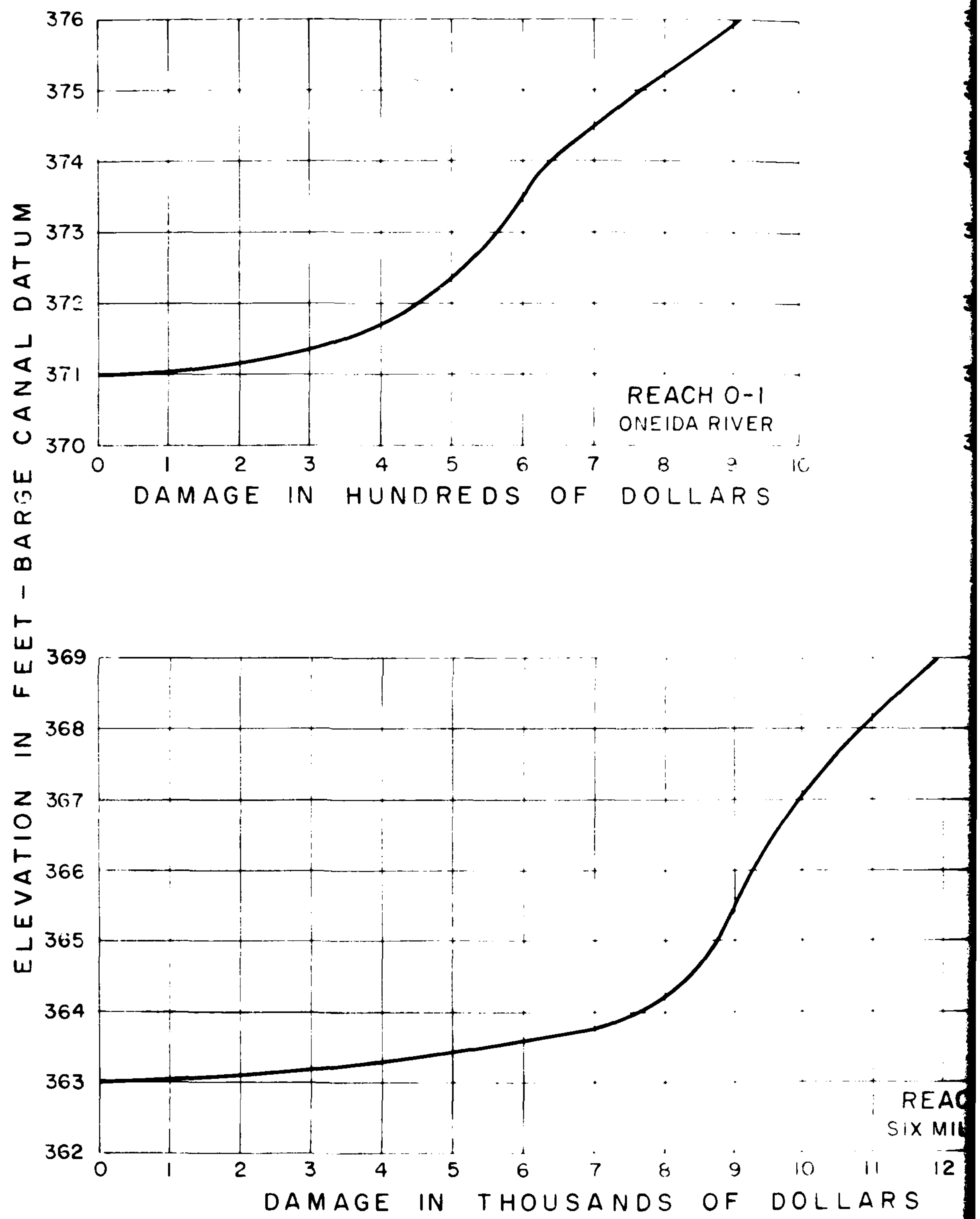
DATUM OF GAGE IS 438.41 FEET ABOVE MEAN SEA LEVEL, (440.0 FEET BARGE CANAL DATUM).

DOTS INDICATE PLOTTING POINTS.

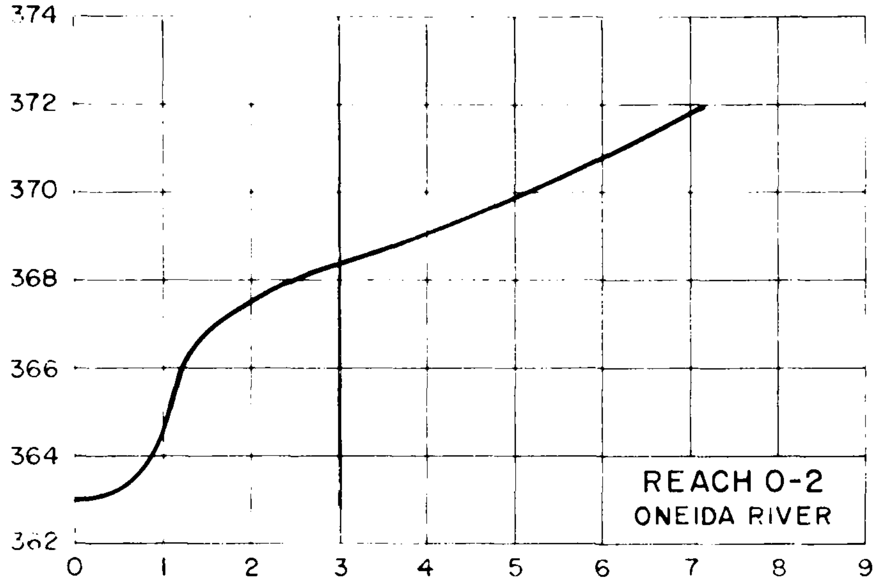
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

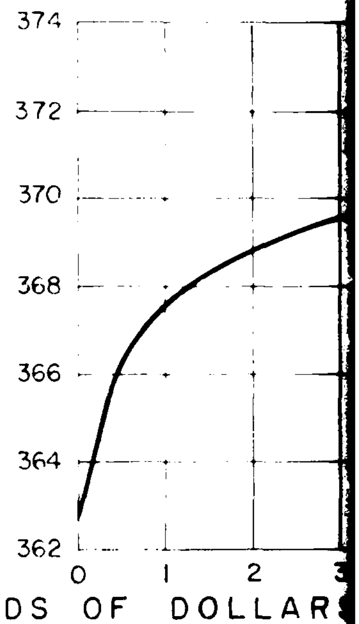
STAGE-FREQUENCY CURVE
REACH 29
CAYUGA-SENECA CANAL

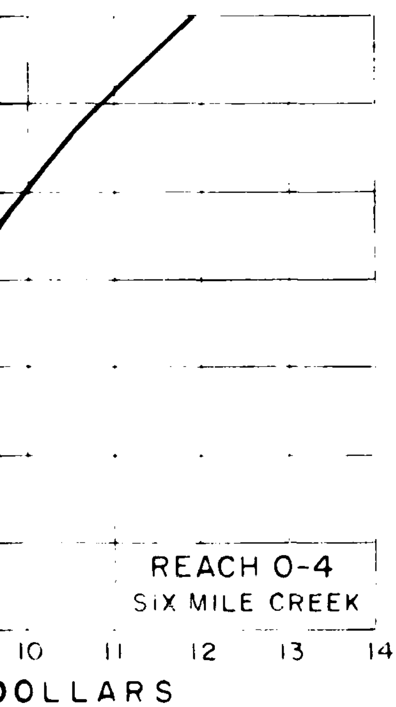
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

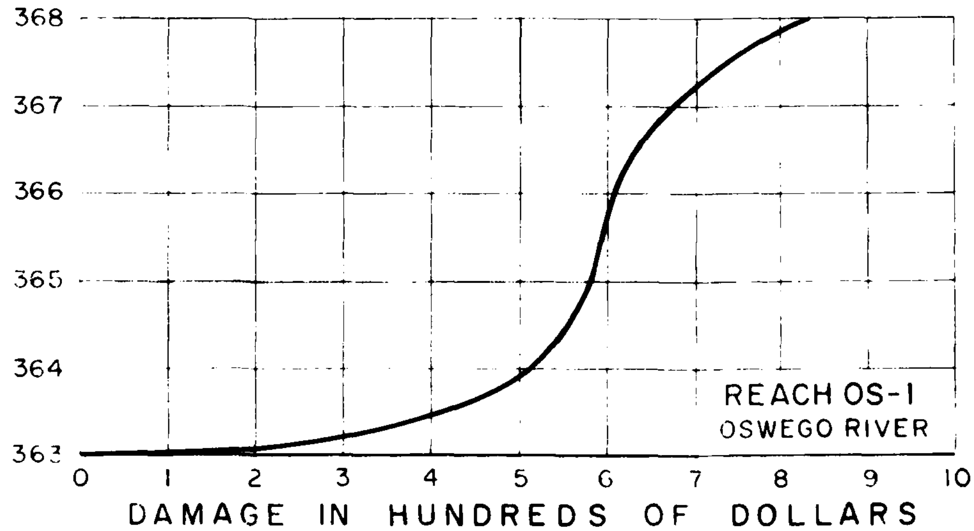


ELEVATION IN FEET - BARGE CANAL DATUM
376
375
374
373
372
371
370
0
1
2
3
4
5
6
7
8
9
10
DAMAGE IN HUNDREDS OF DOLLARS
REACH O-1
ONEIDA RIVER
369
368
367
366
365
364
363
362
0
1
2
3
4
5
6
7
8
9
10
11
12
DAMAGE IN THOUSANDS OF DOLLARS



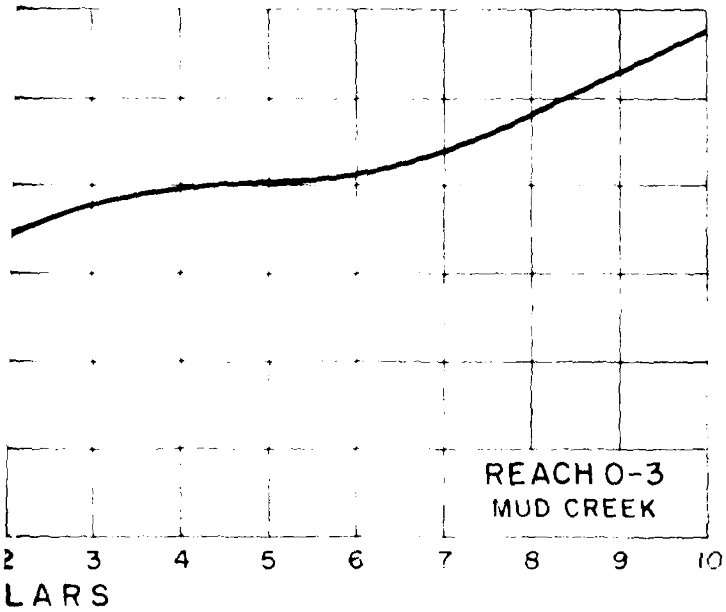






NOTES:

THE ABOVE WEIGHTED DAMAGES ARE BASED ON ADJUSTED NORMALIZED PRICE LEVELS FURNISHED BY THE U.S. SOIL CONSERVATION SERVICE AND DO NOT CORRESPOND TO THOSE IN TABLE 2[illegible] (SEE PAGE 62).



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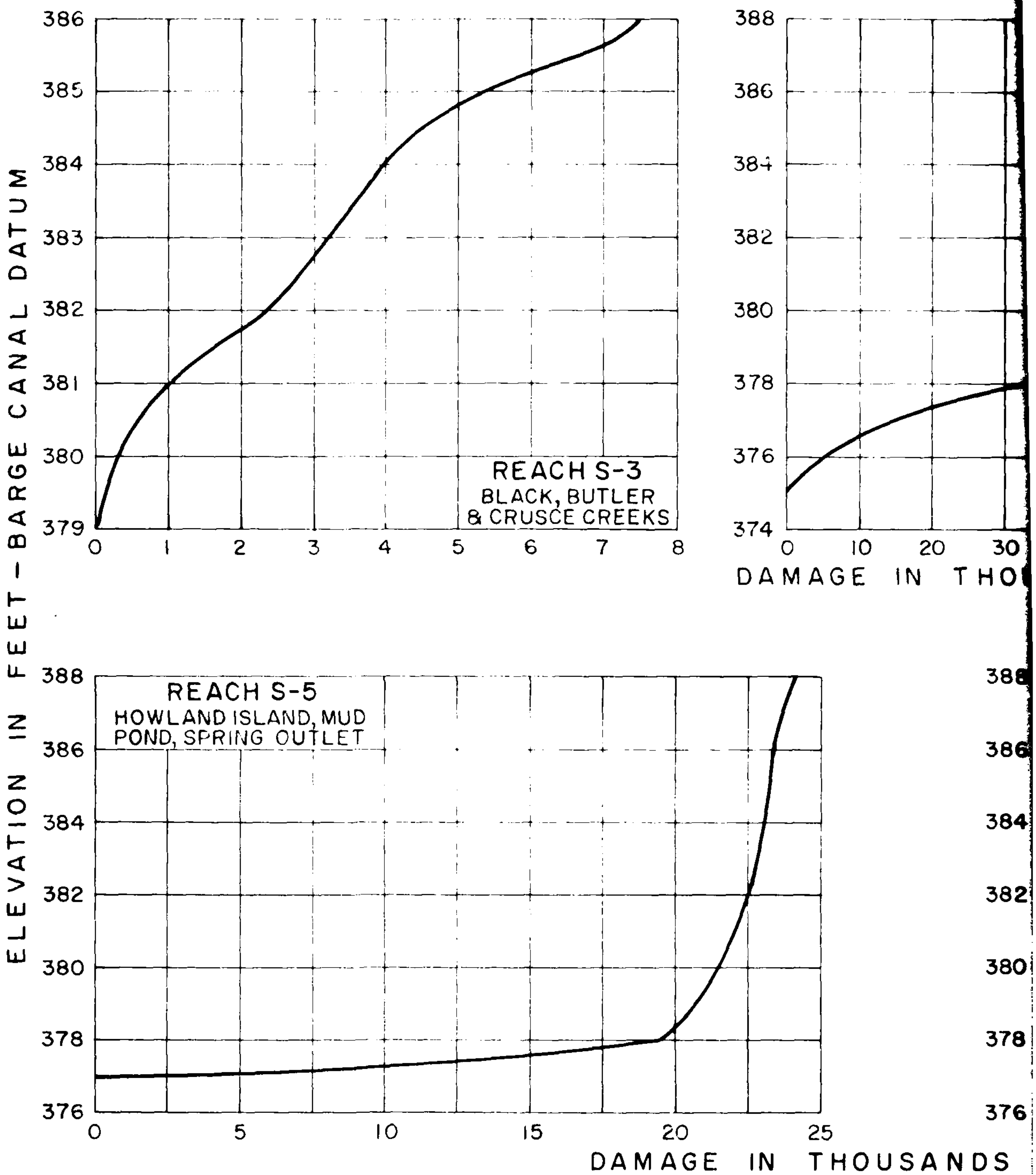
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

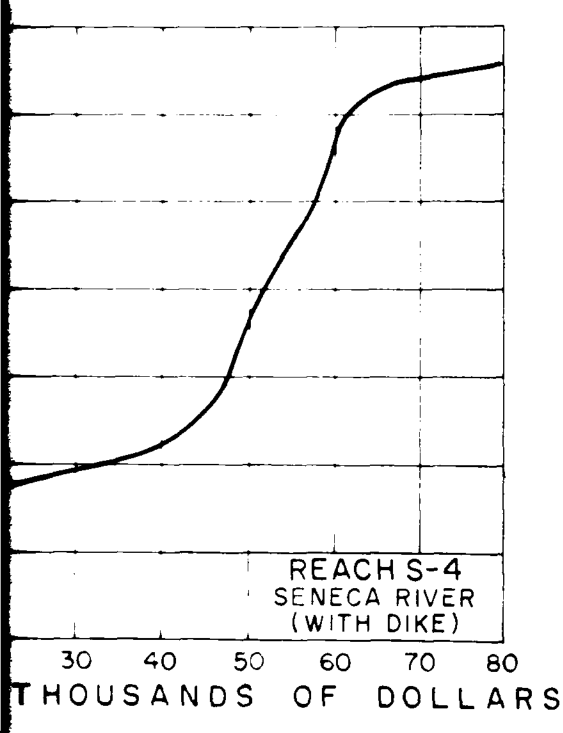
STAGE-DAMAGE CURVES
AGRICULTURAL

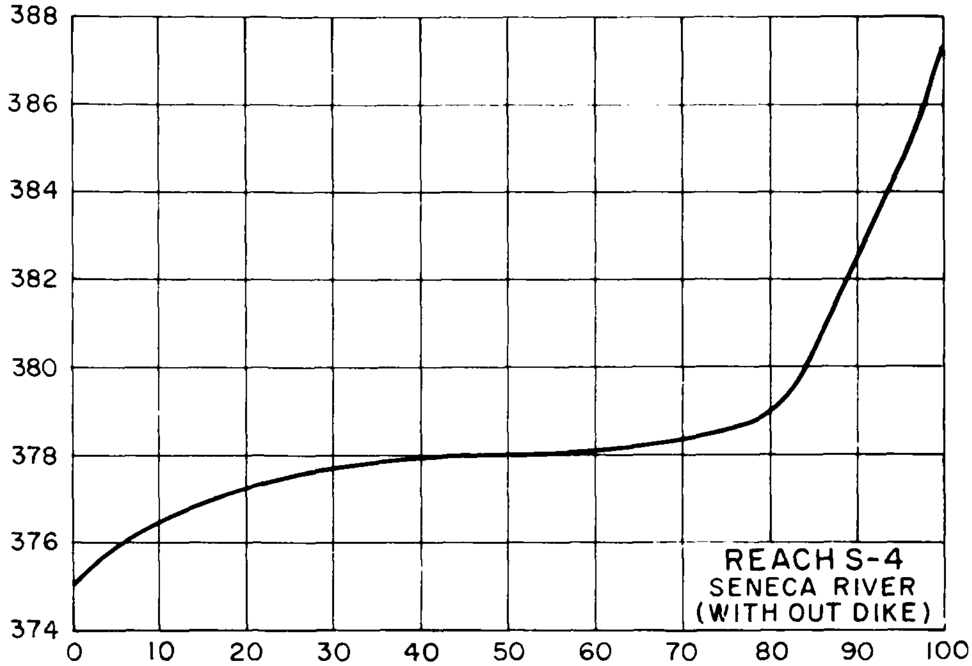
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

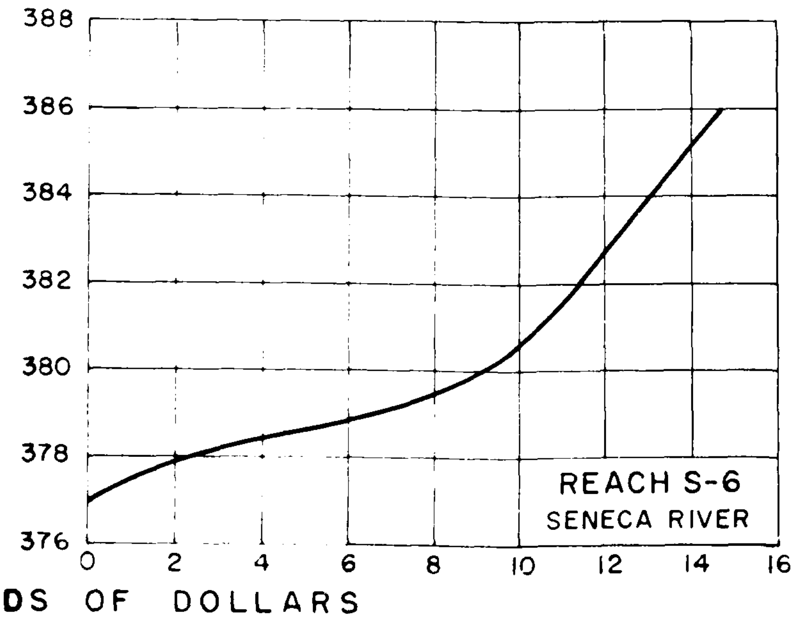


NOTES:

THE ABOVE WEIGHTED DAMAGES ARE BASED O
LEVELS FURNISHED BY THE U S SOIL CONSERVATIO
TO THOSE IN TABLE 21 (SEE PAGE 62).







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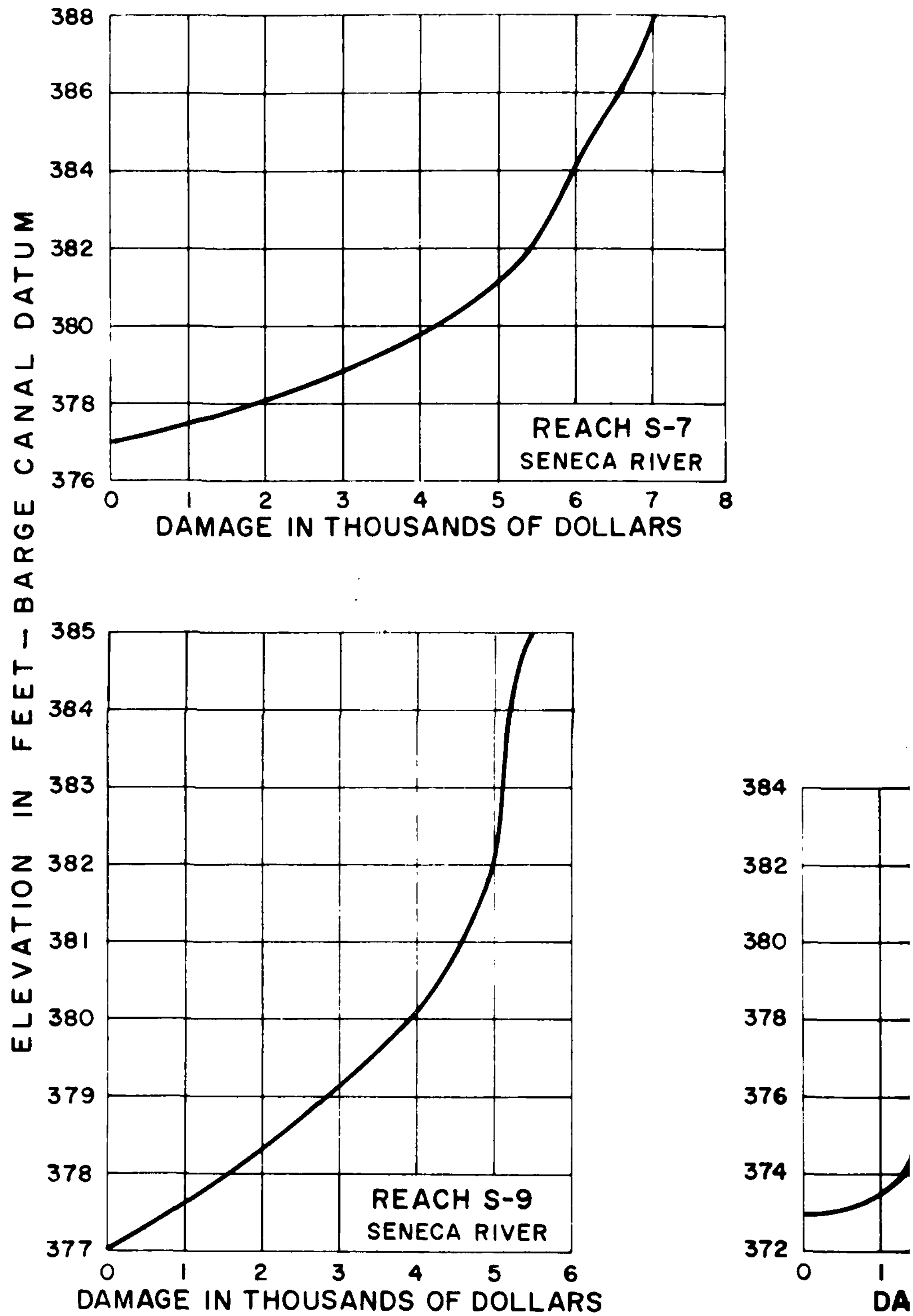
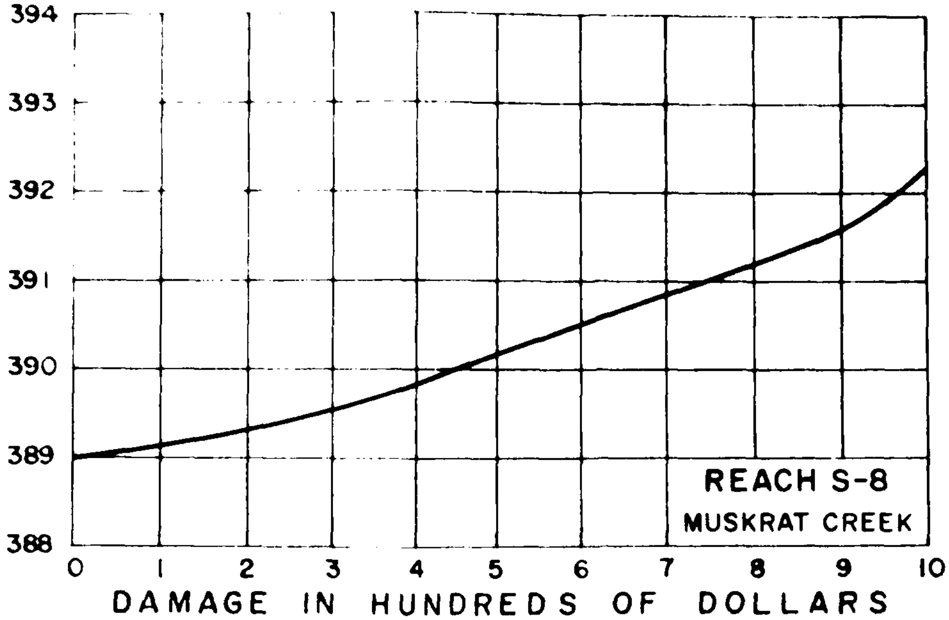
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-DAMAGE CURVES
AGRICULTURAL
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

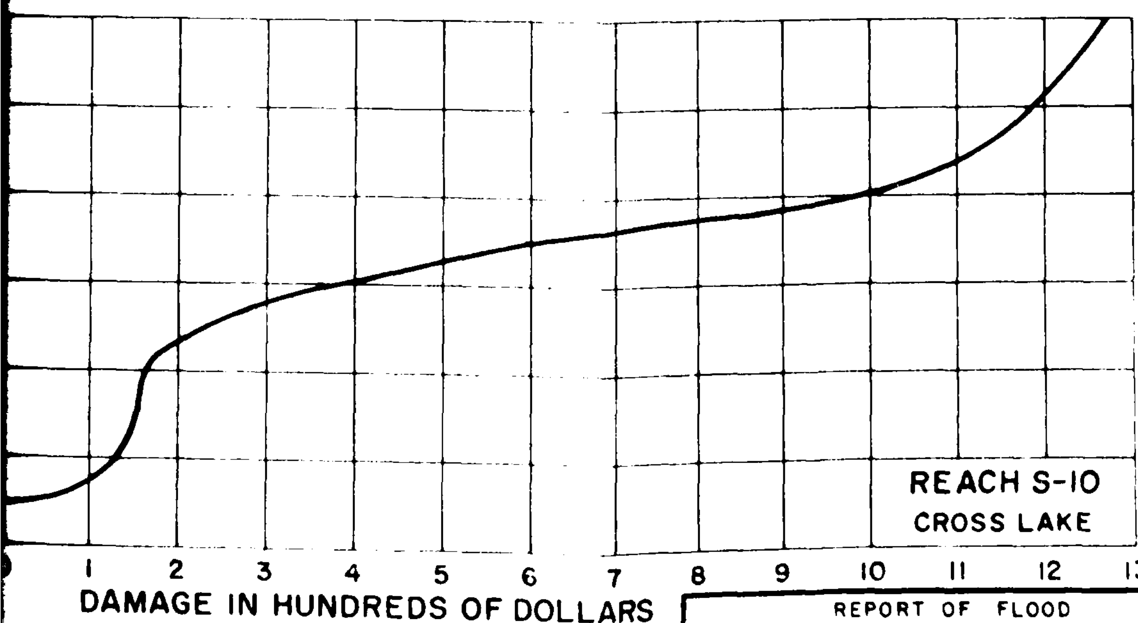
PLATE 95



NOTES:

THE ABOVE WEIGHTED DAMAGES ARE BASED ON ADJUSTED NORMALIZED
LEVELS FURNISHED BY THE U.S. SOIL CONSERVATION SERVICE AND DO NOT COR
TO THOSE IN TABLE 21 (SEE PAGE 62).



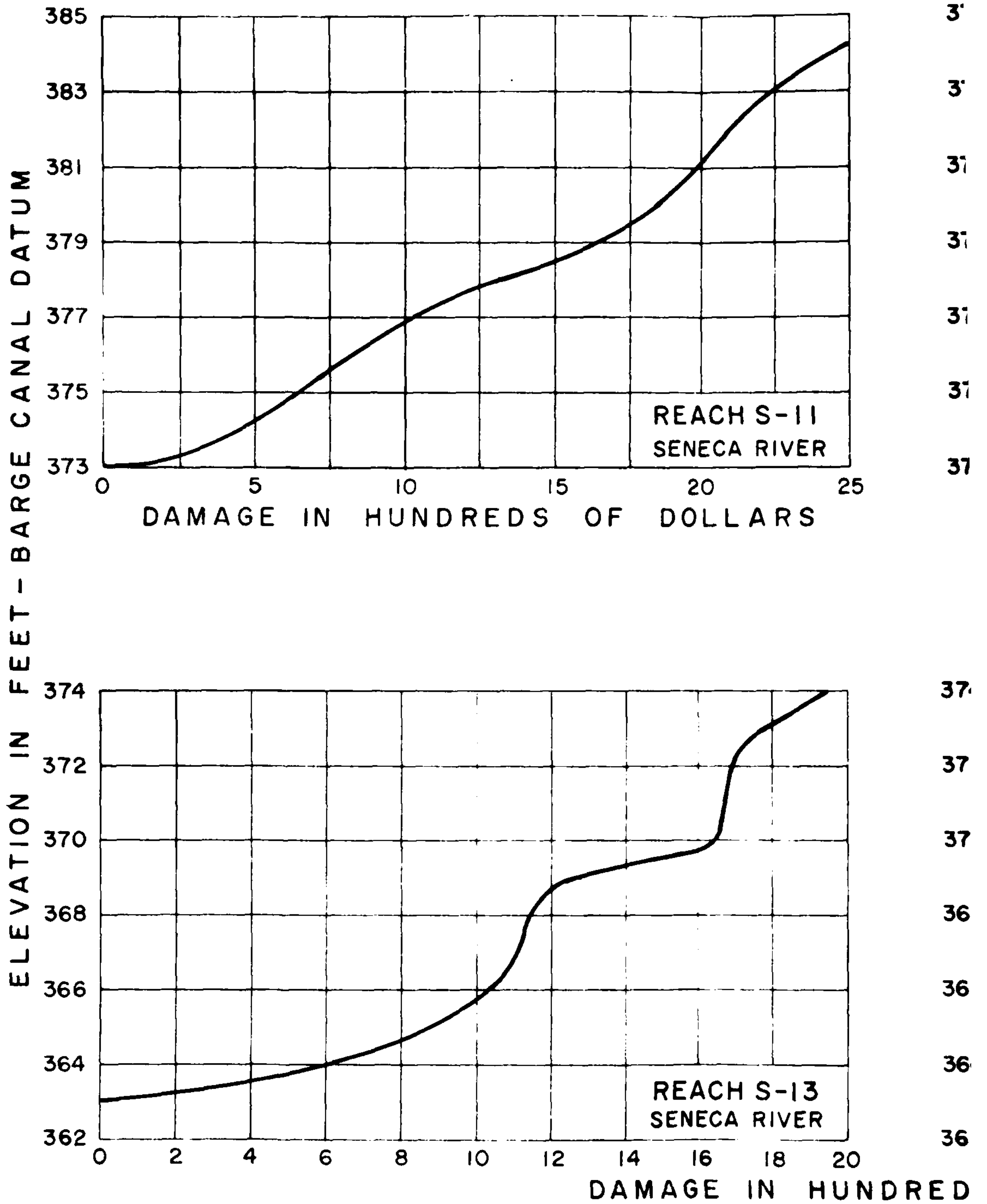


ALIZED PRICE
NOT CORRESPOND

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN
STAGE-DAMAGE CURVES
AGRICULTURAL

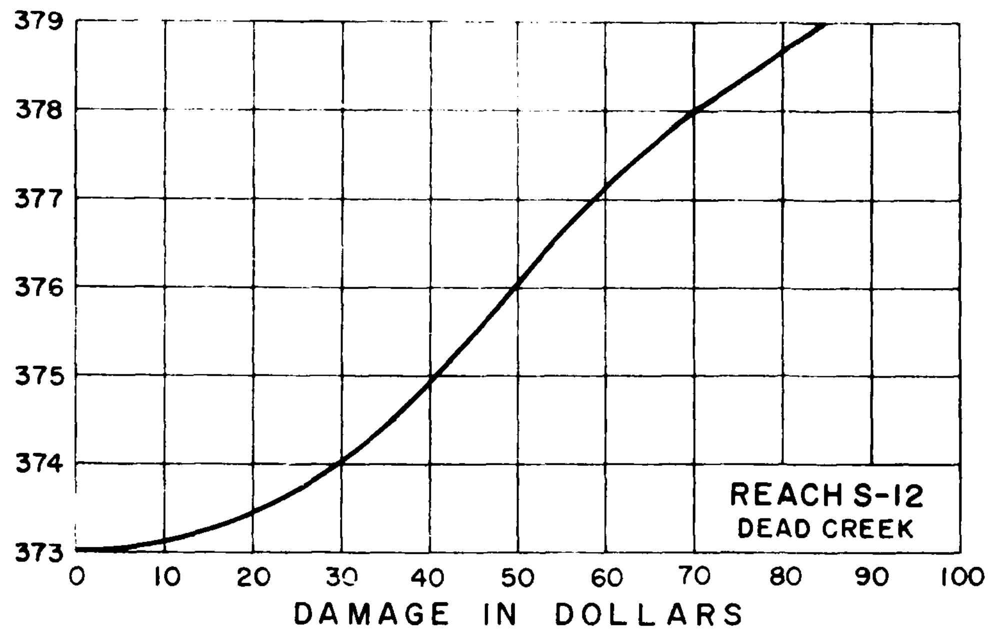
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

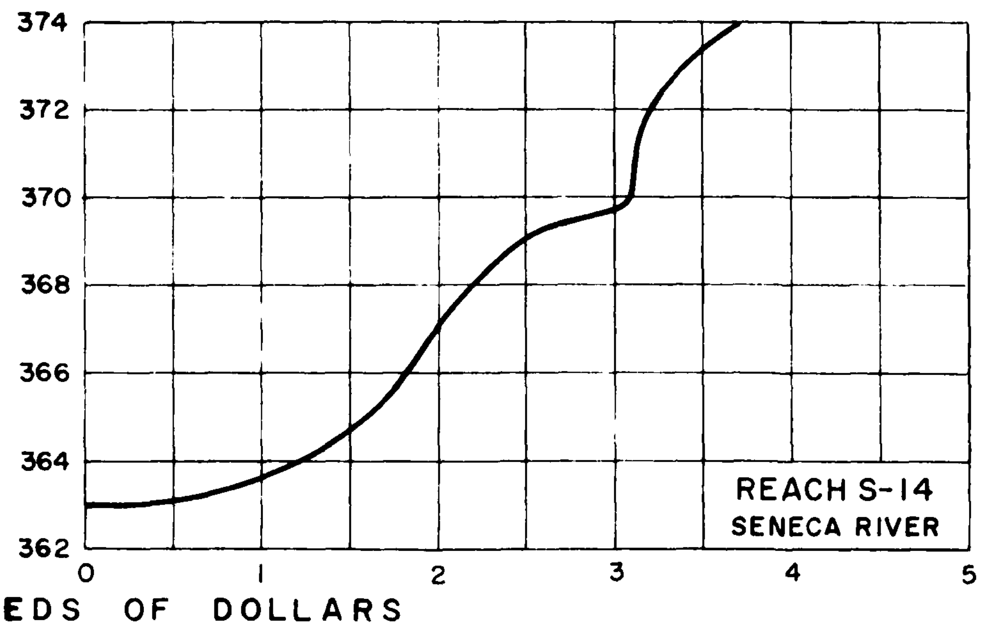
PLATE 96



NOTES:

THE ABOVE WEIGHTED DAMAGES ARE BASED ON ADJUSTED NORMALIZED PRICE LEVELS FURNISHED BY THE U.S. SOIL CONSERVATION SERVICE AND DO NOT CORRESPOND TO THOSE IN TABLE 21 (SEE PAGE 62).





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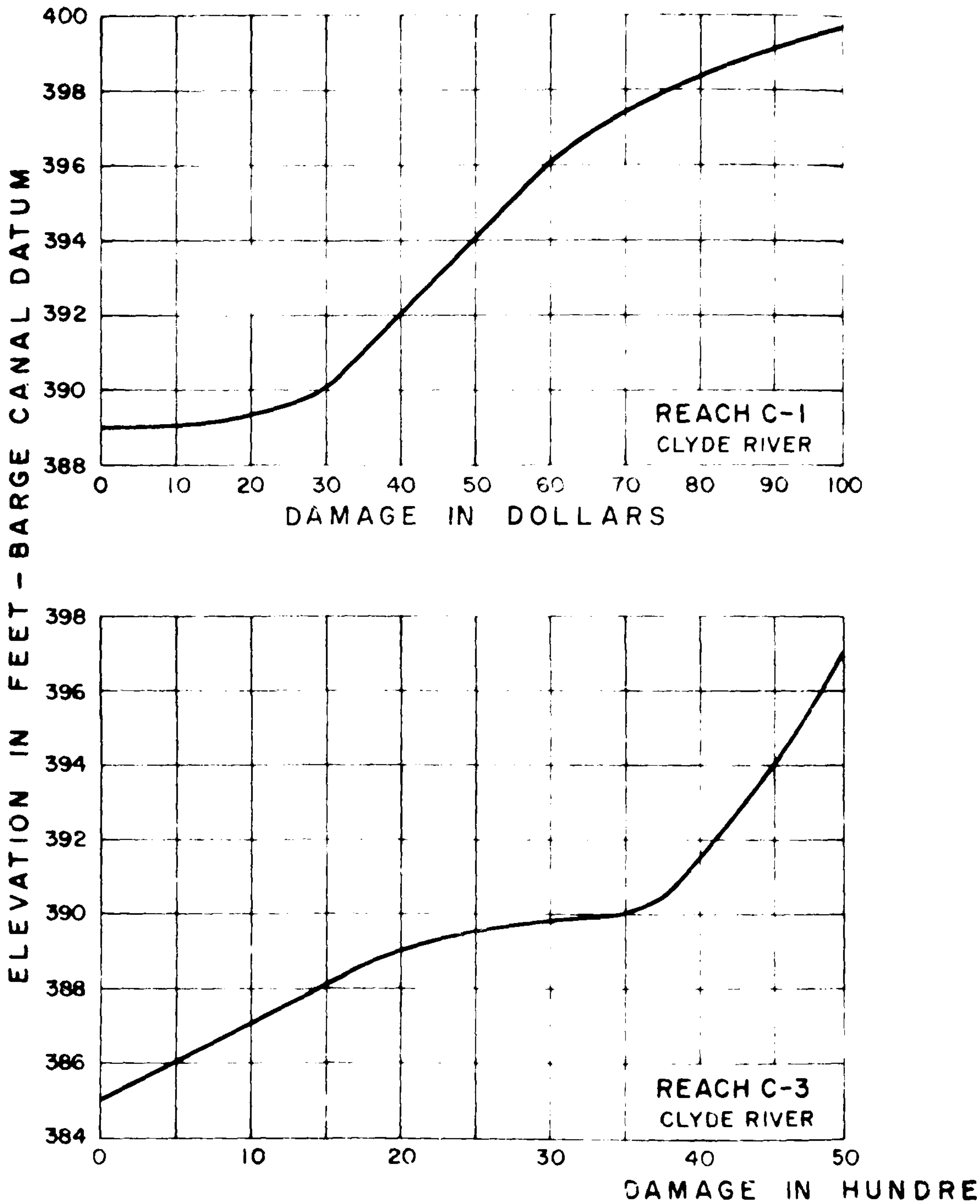
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES

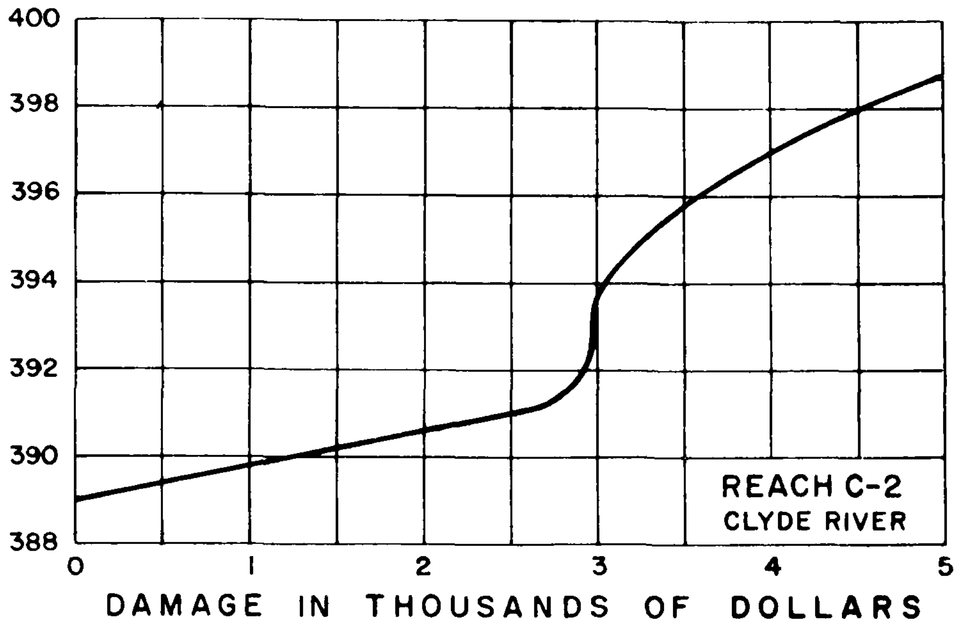
AGRICULTURAL

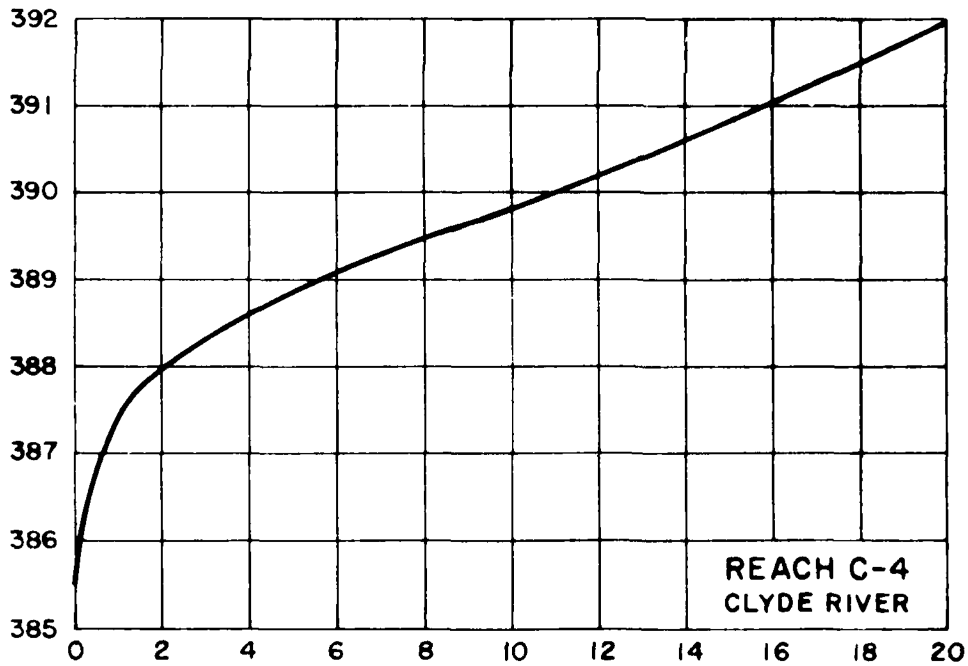
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973



NOTES:

THE ABOVE WEIGHTED DAMAGES ARE BASED ON ADJUSTED NORMALIZED PRICE LEVELS FURNISHED BY THE U S SOIL CONSERVATION SERVICE AND DO NOT CORRESPOND TO THOSE IN TABLE 21 (SEE PAGE 62).





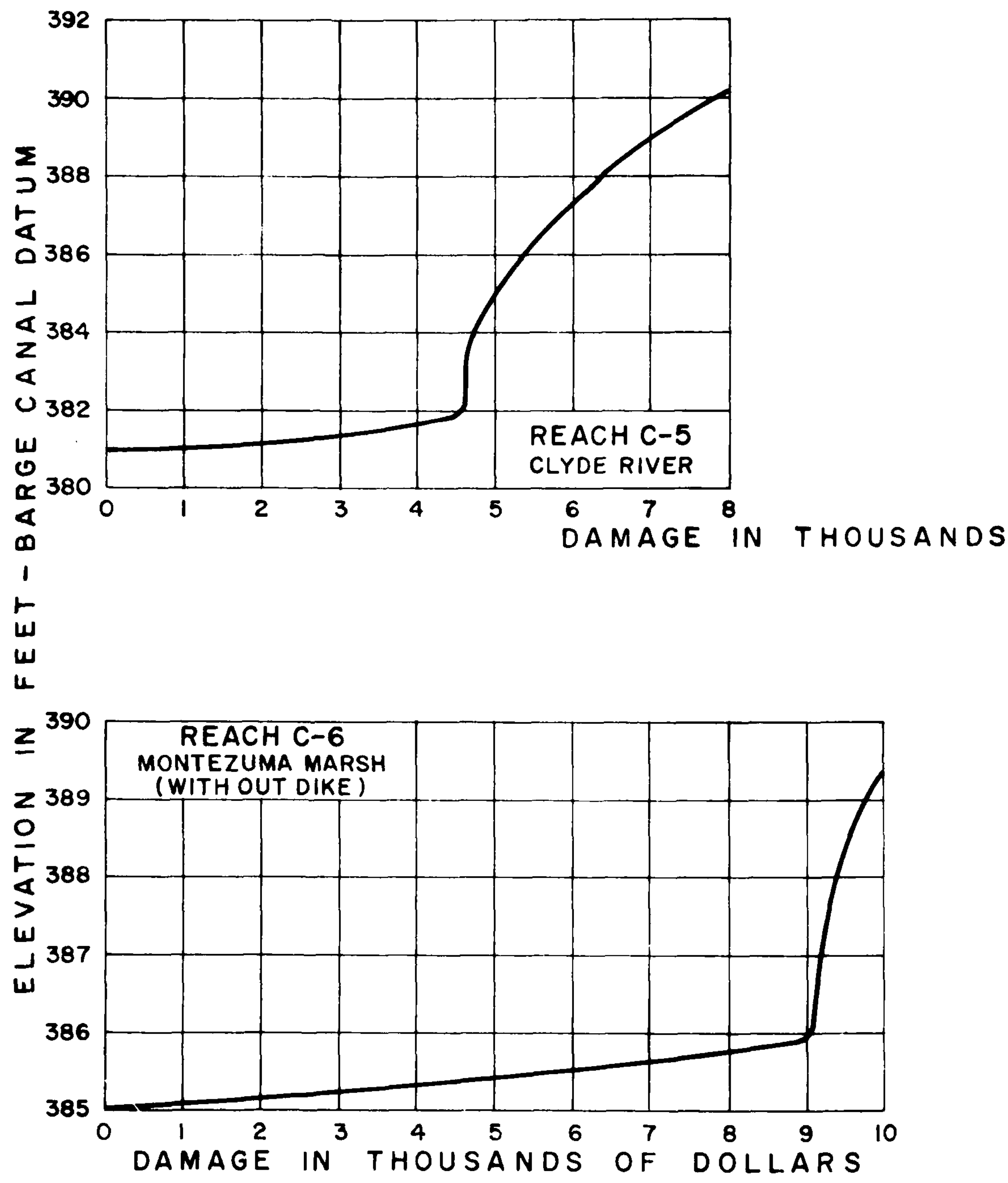
UNDREDS OF DOLLARS

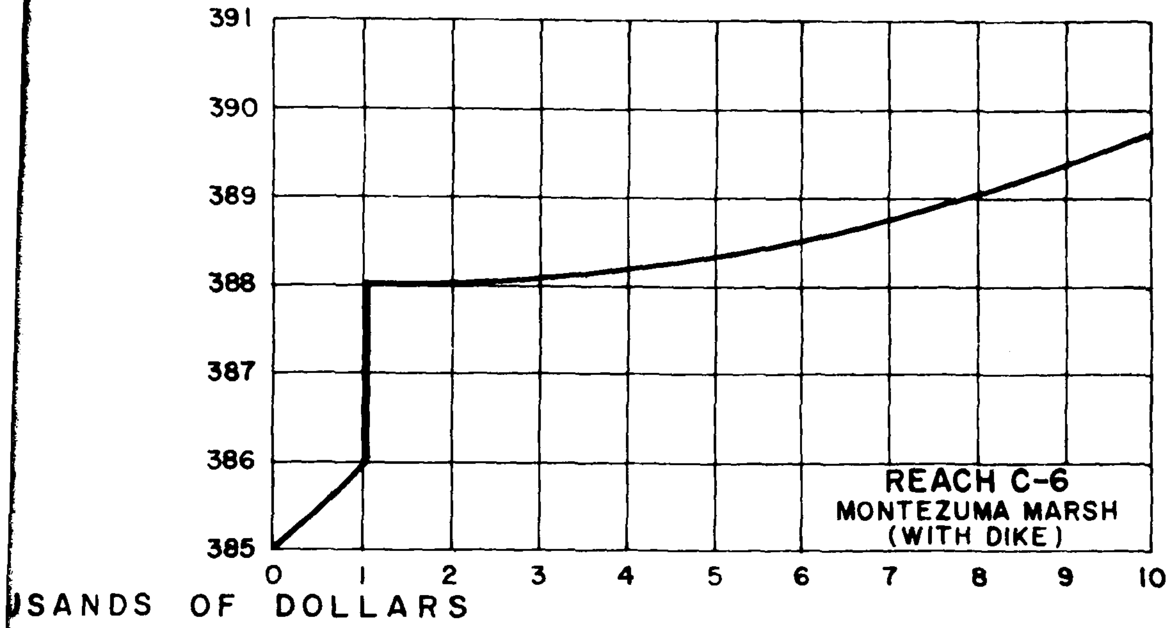
PRICE
RESPOND

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES
AGRICULTURAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973


REACH C-5
CLYDE RIVER
REACH C-6
MONTEZUMA MARSH
(WITH OUT DIKE)
ELEVATION IN FEET - BARGE CANAL DATUM
DAMAGE IN THOUSANDS
DAMAGE IN THOUSANDS OF DOLLARS
392
390
388
386
384
382
380
390
389
388
387
386
385
0
1
2
3
4
5
6
7
8
9
10



NOTES:

THE ABOVE WEIGHTED DAMAGES ARE BASED ON ADJUSTED NORMALIZED PRICE LEVELS FURNISHED BY THE U.S. SOIL CONSERVATION SERVICE AND DO NOT CORRESSPOND TO THOSE IN TABLE 21 (SEE PAGE 62).

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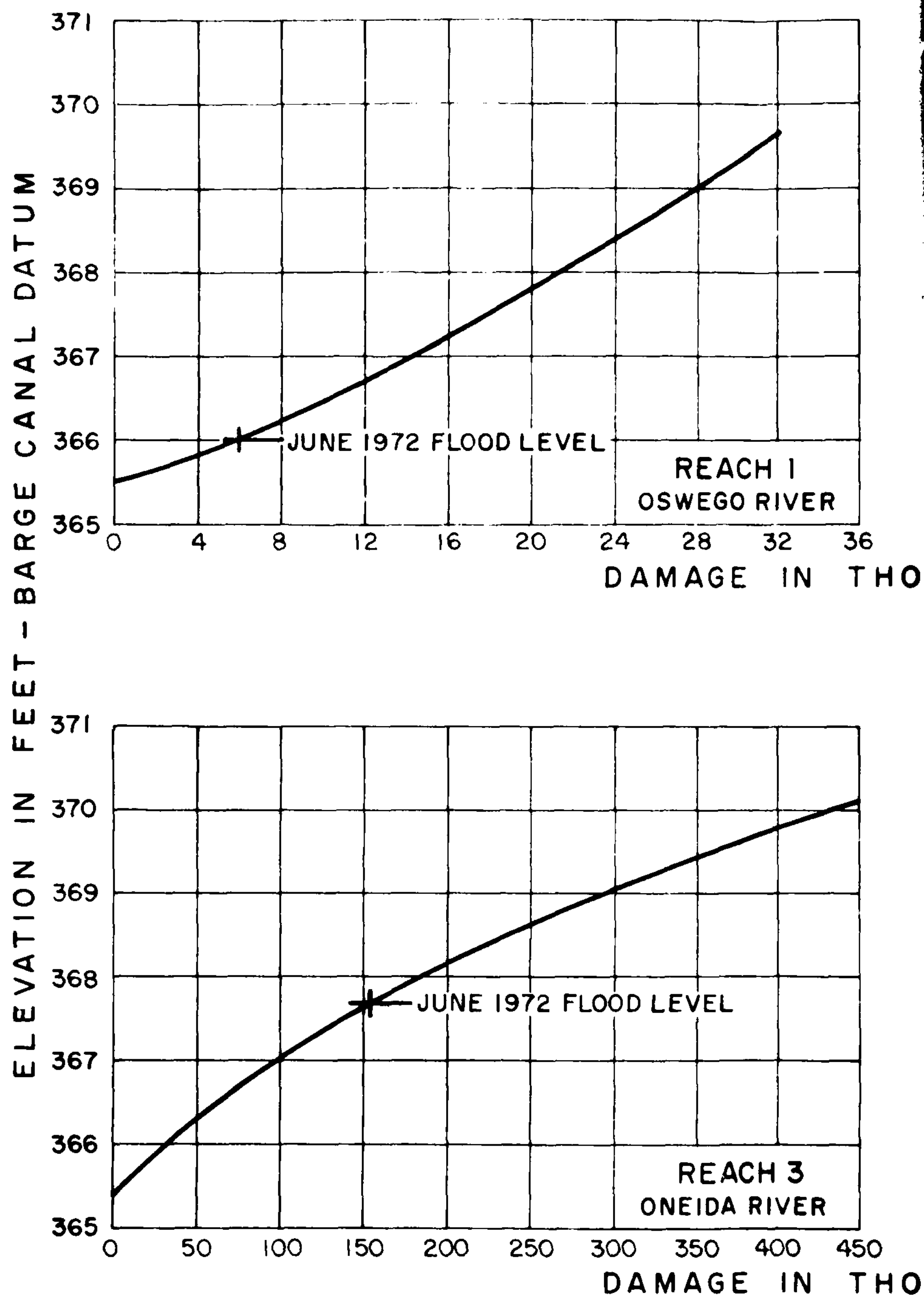
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES
AGRICULTURAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

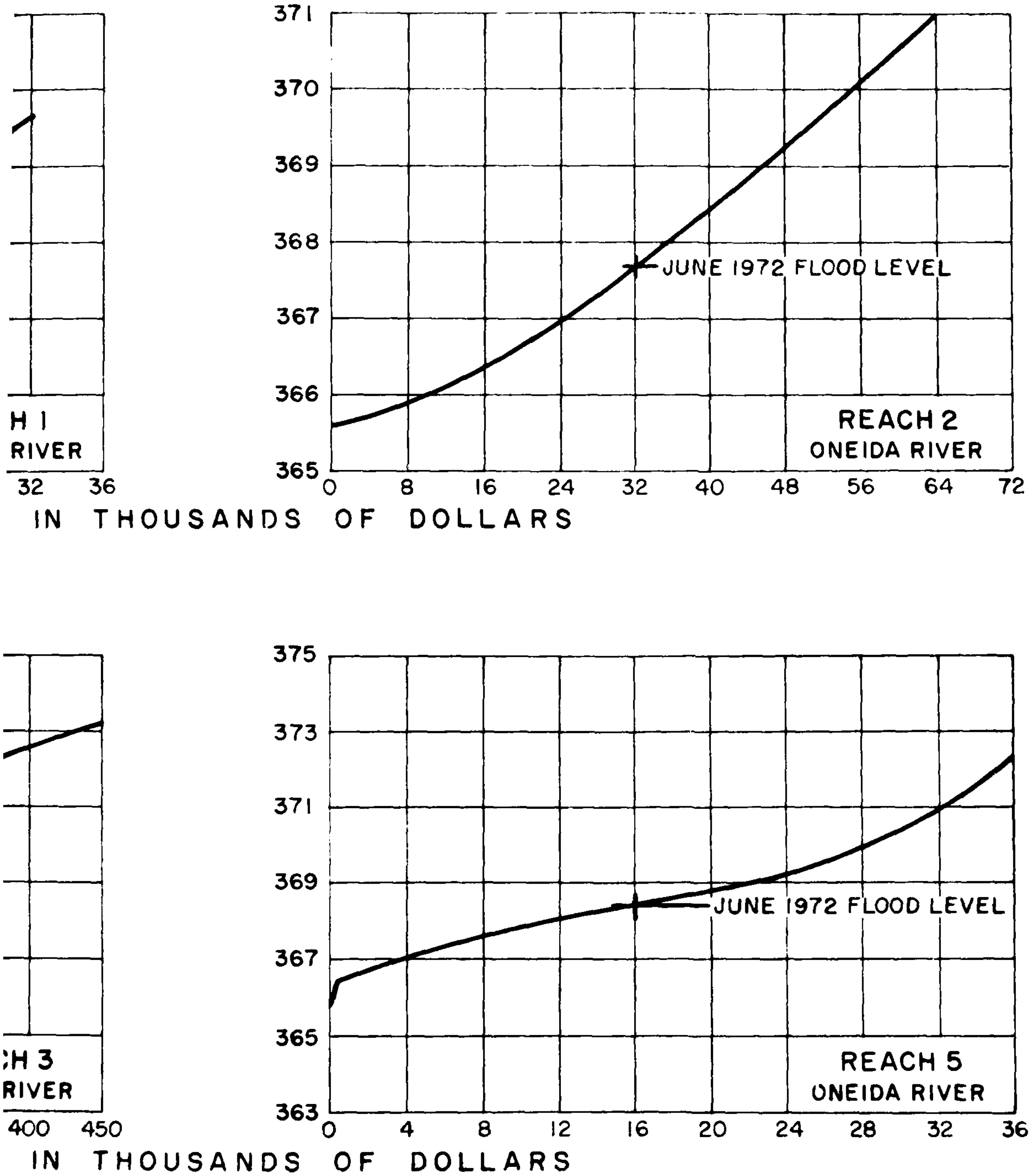


NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

DAMAGES FOR REACH 4 WERE CONSIDERED NEGLIGIBLE OR NONEXISTANT.



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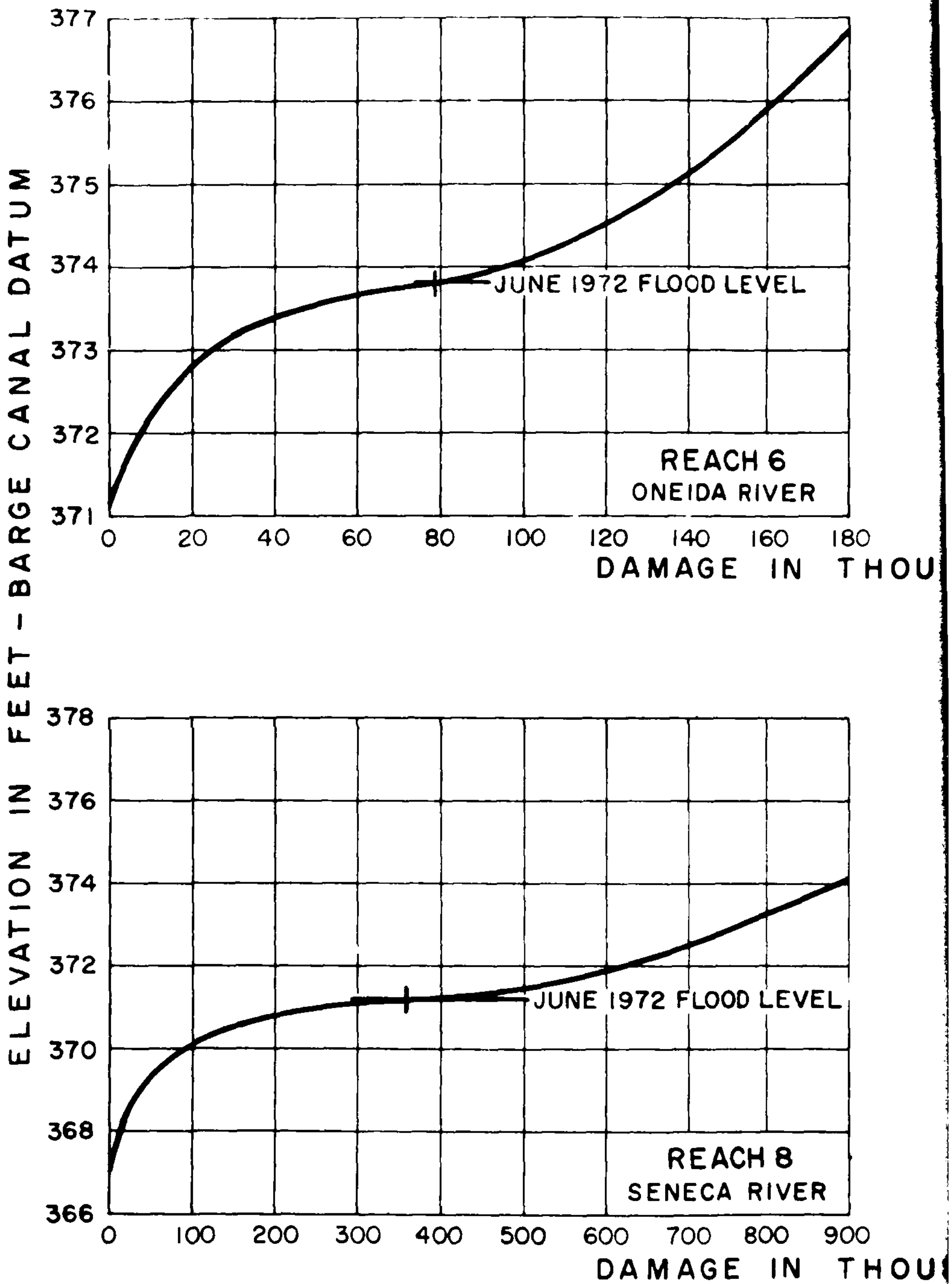
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES
NON-AGRICULTURAL

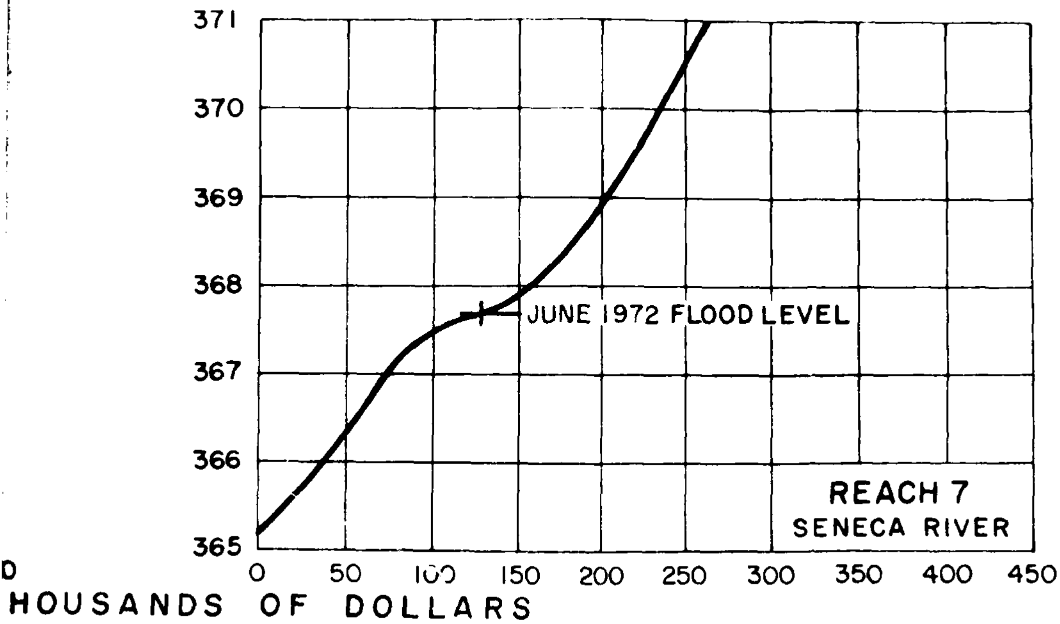
U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

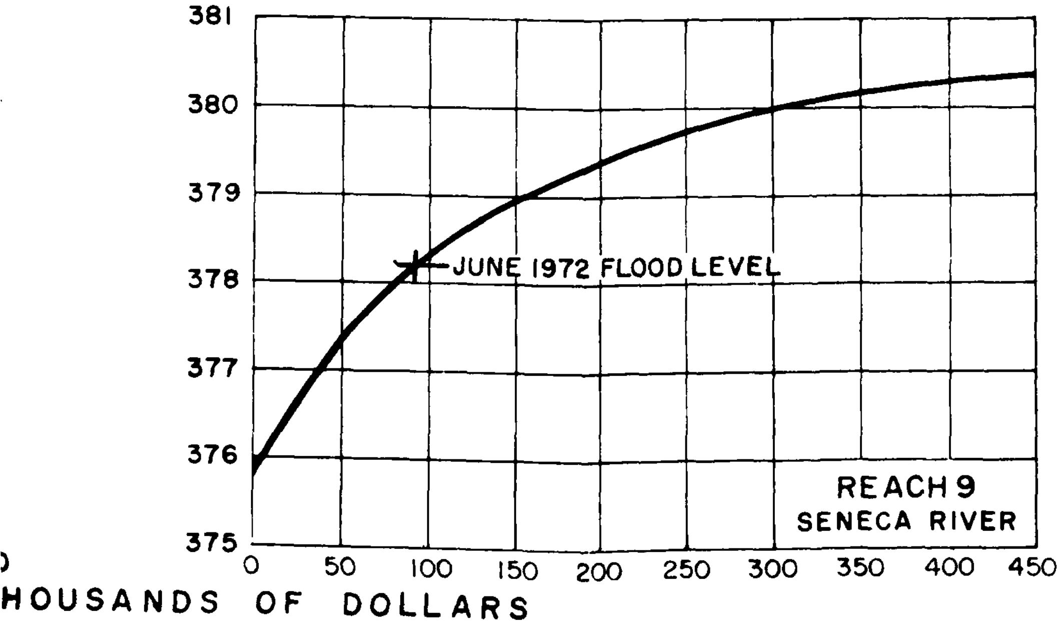


NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.





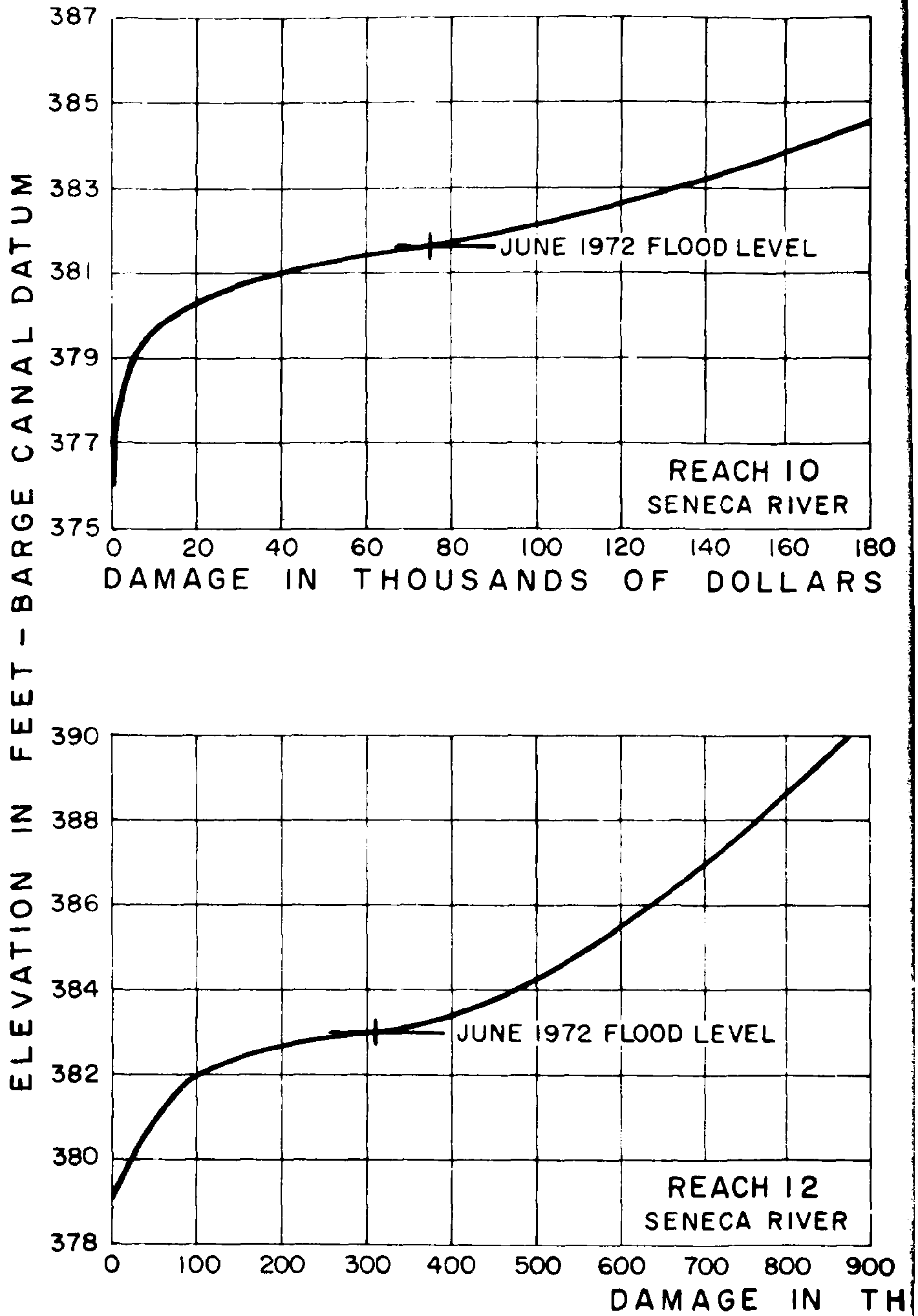
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES

NON-AGRICULTURAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

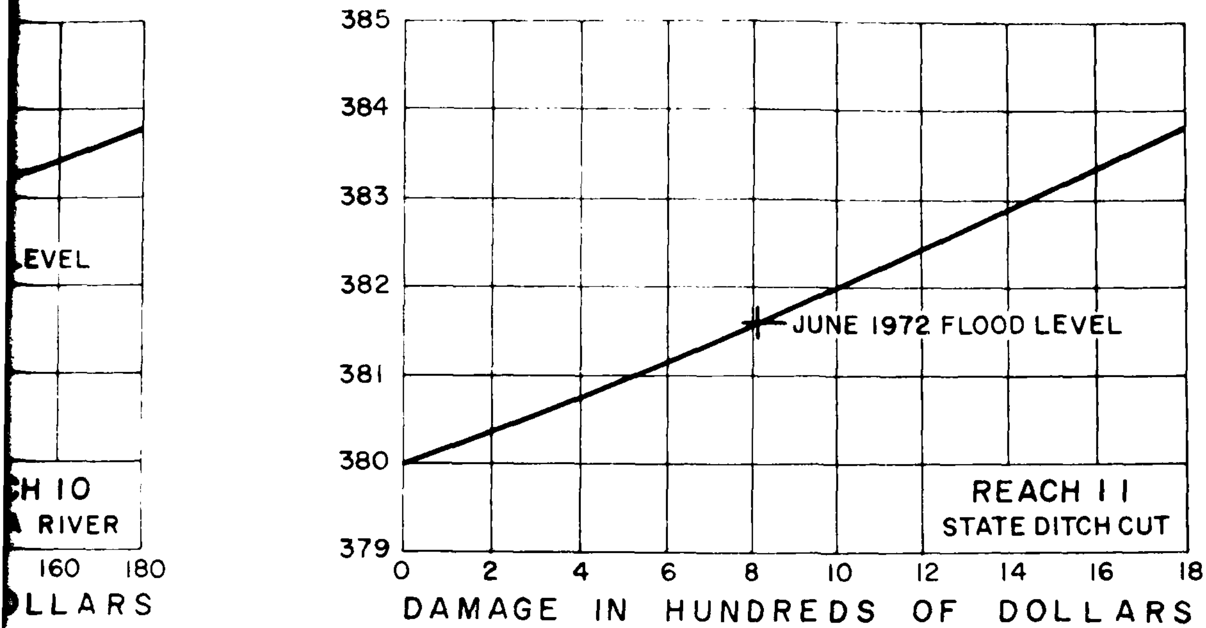
PLATE 101

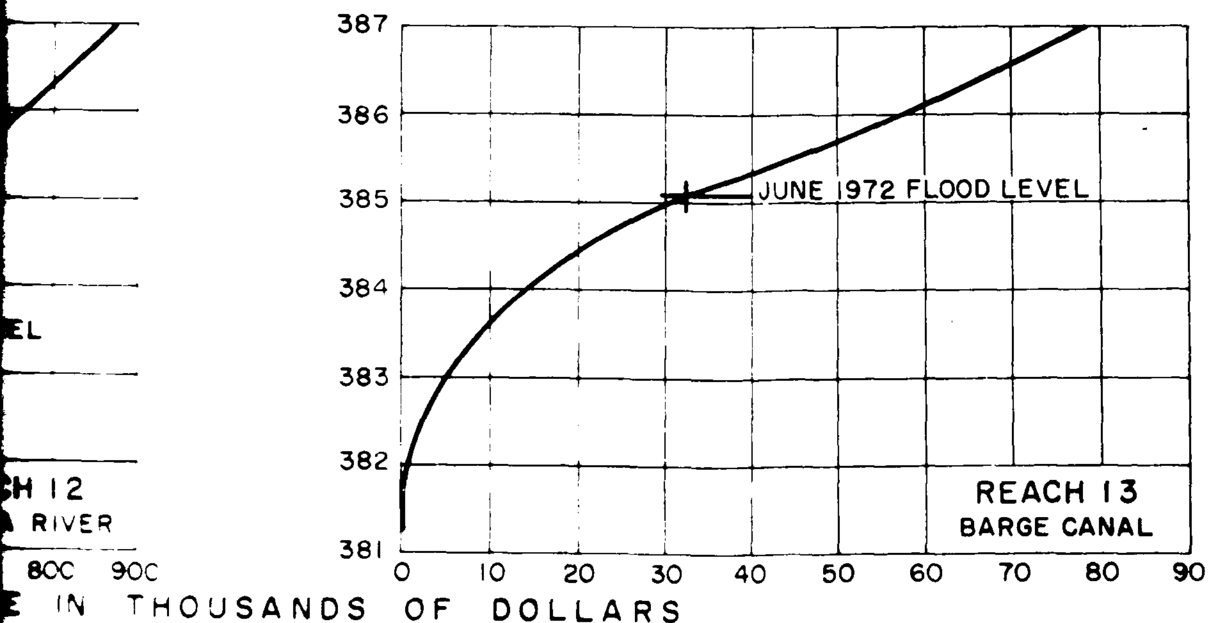


NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.





LEVEL AND

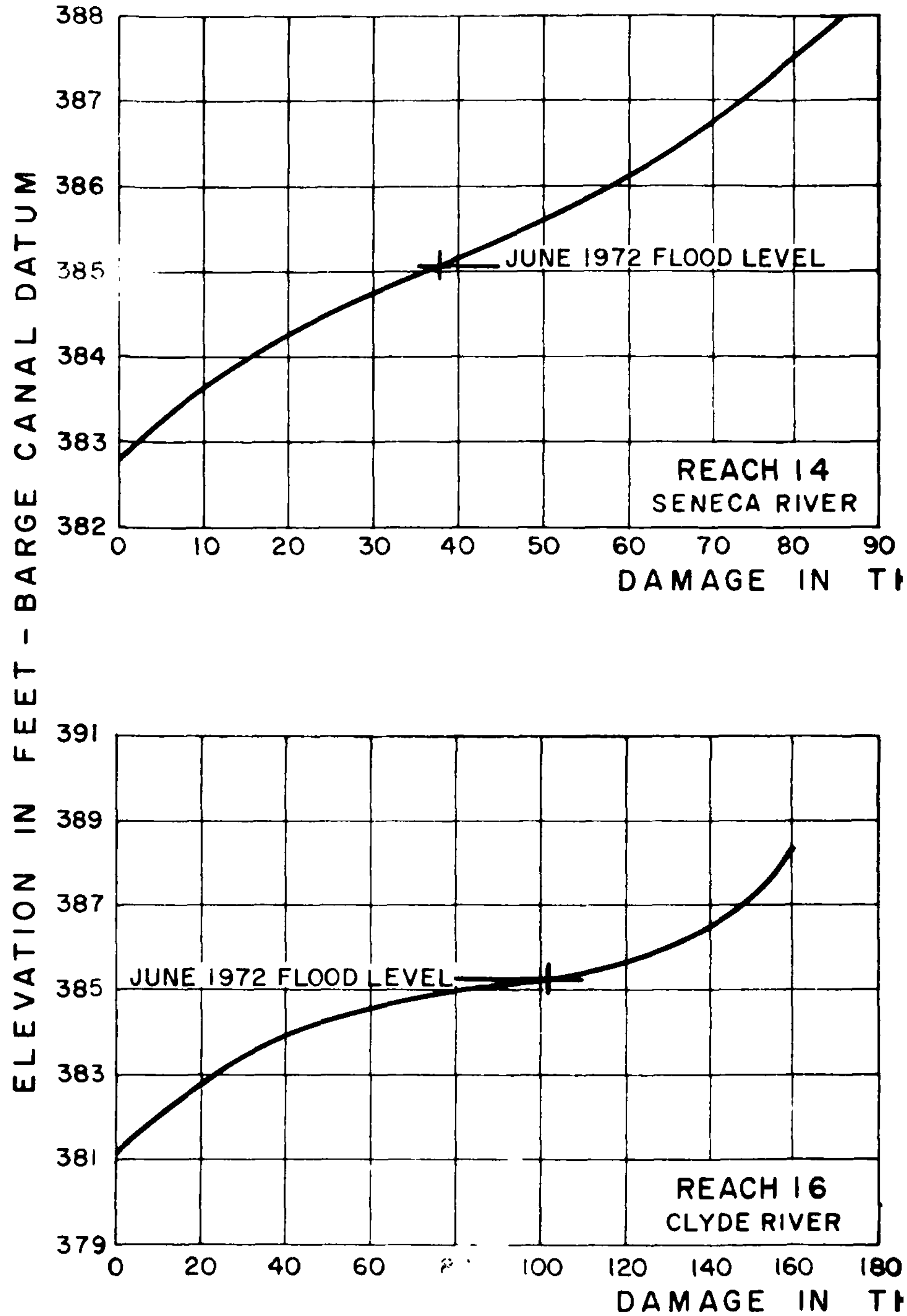
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972

OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES

NON-AGRICULTURAL

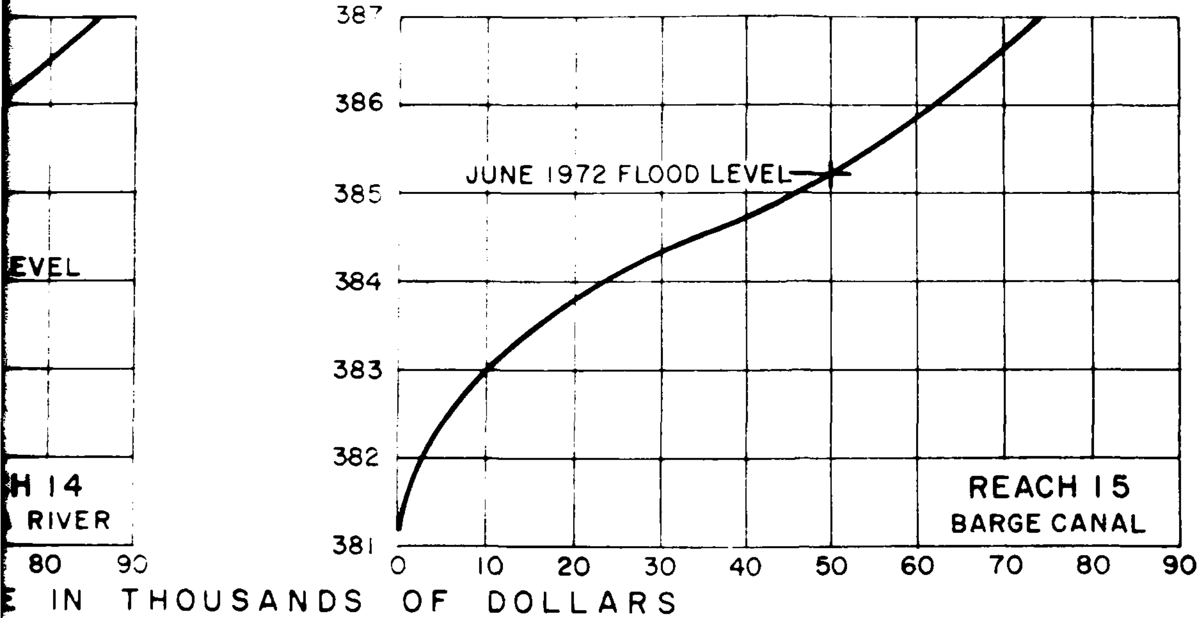
U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

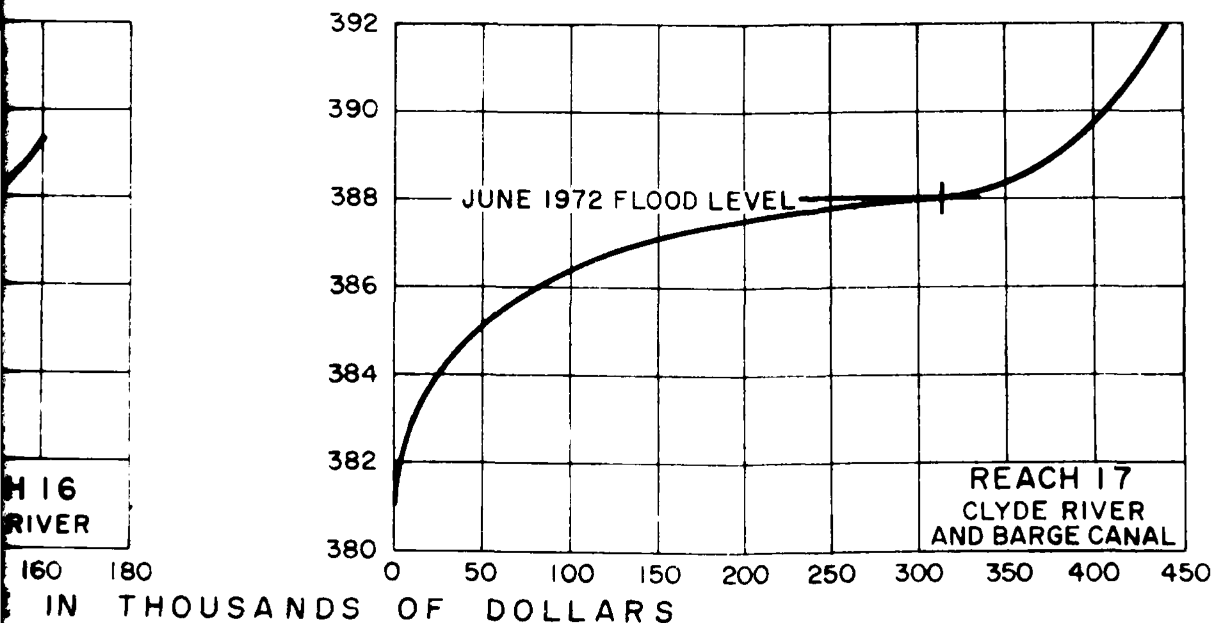


NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.





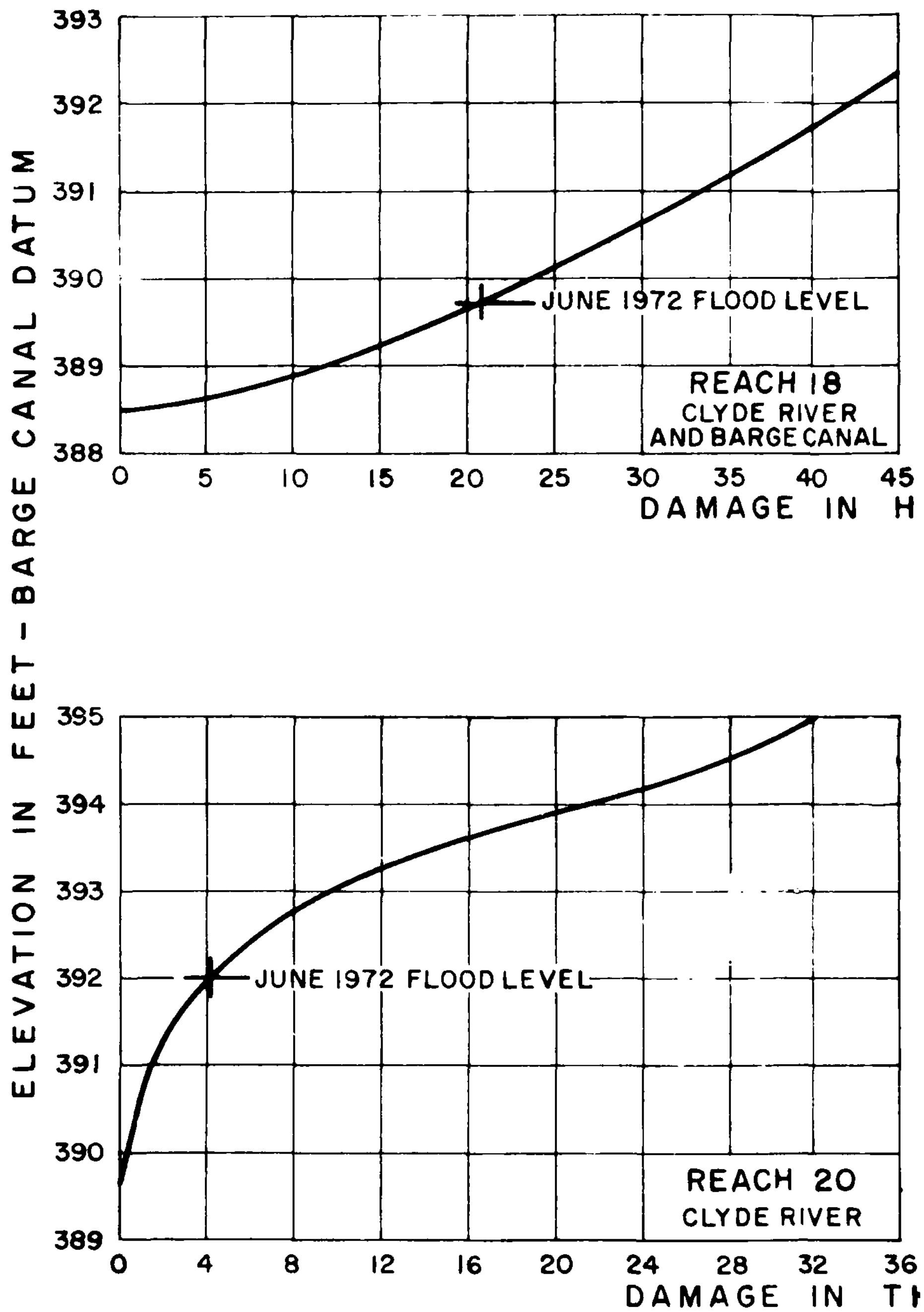
VEL AND

REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES

NON-AGRICULTURAL

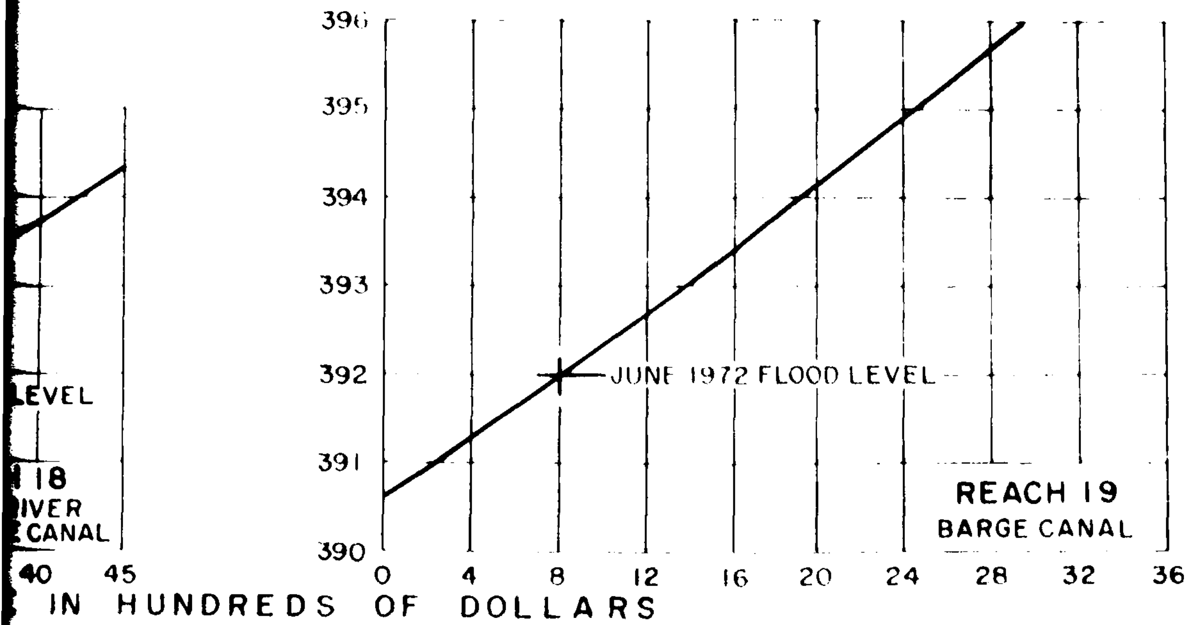
U. S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

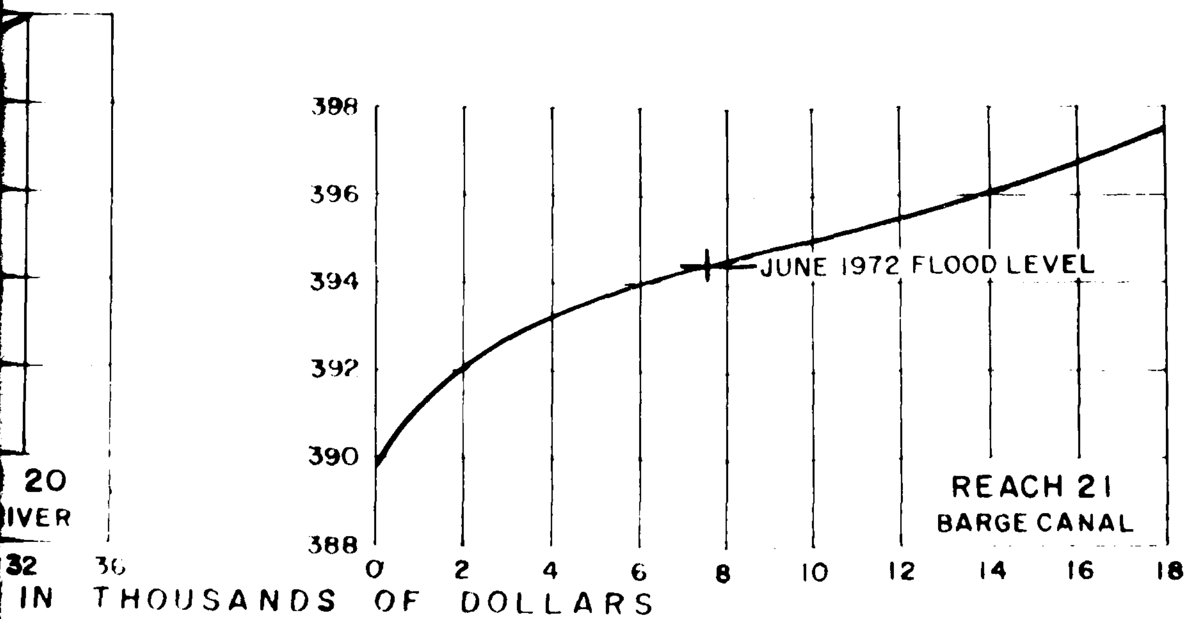


NOTES:

ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.





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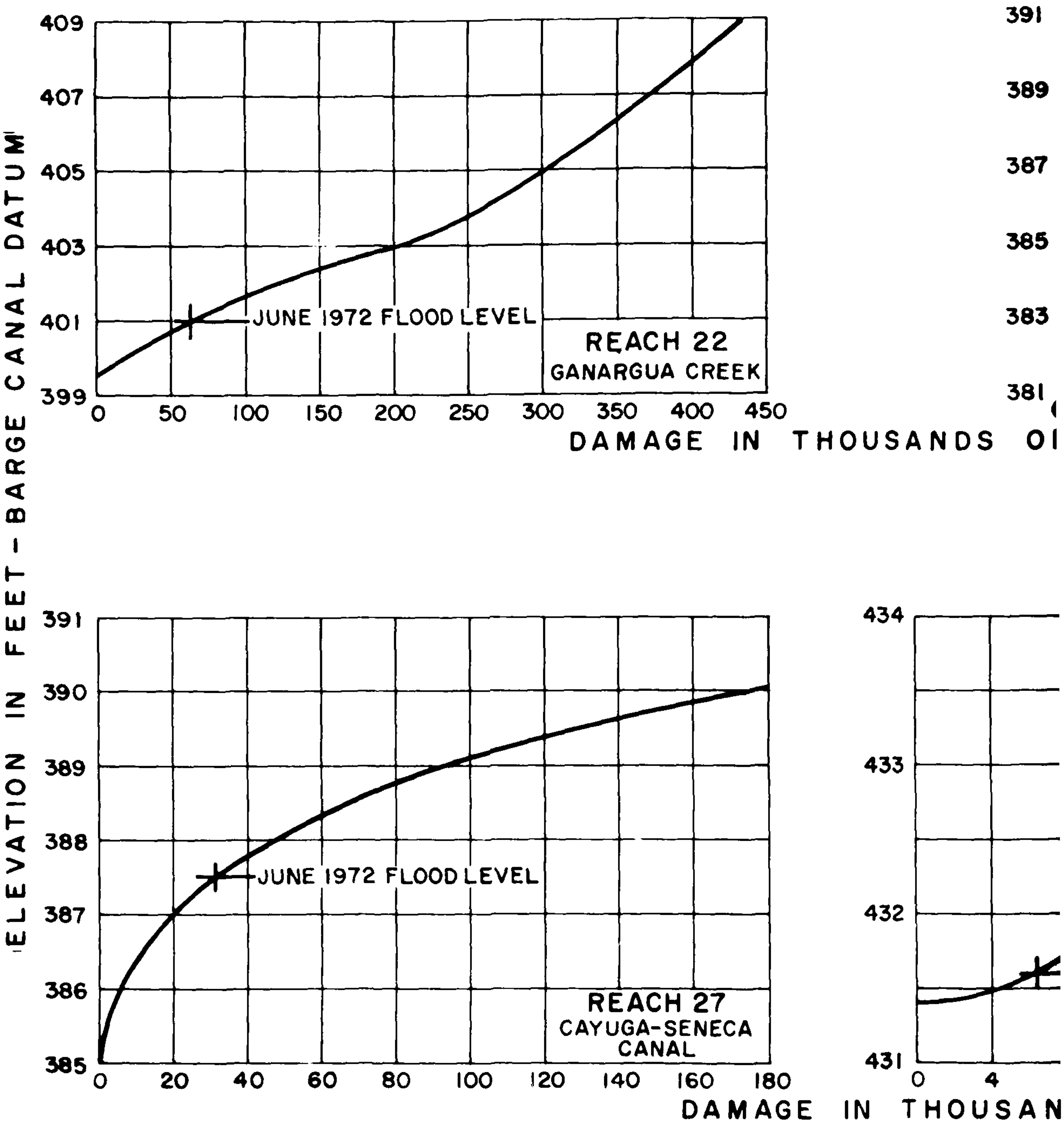
REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES

NON-AGRICULTURAL

U S ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

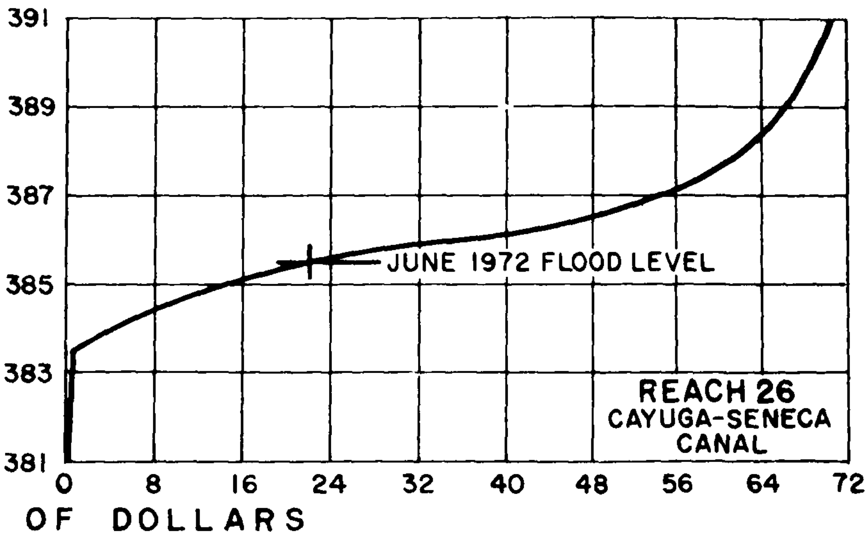


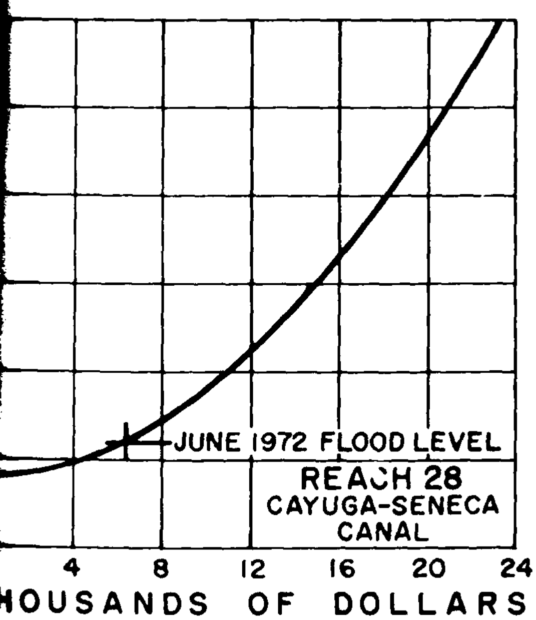
NOTES:

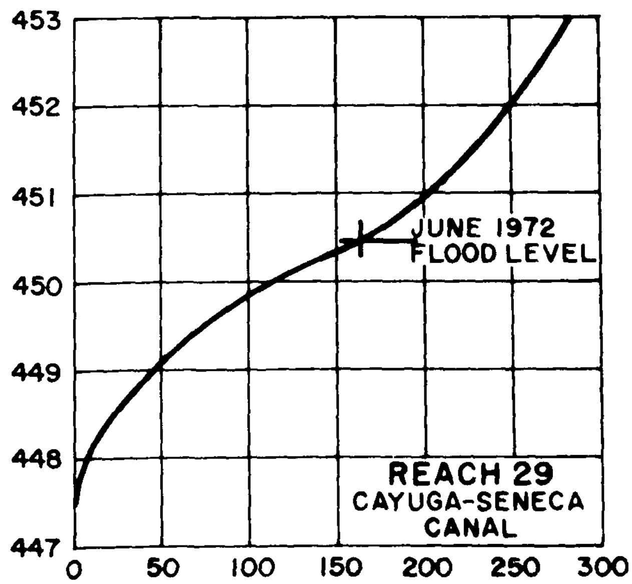
ALL VALUES ARE ON THE JUNE 1972 PRICE LEVEL AND CONDITIONS OF DEVELOPMENT.

NON-RECURRING DAMAGES ARE NOT INCLUDED.

DAMAGES FOR REACHES 23 THRU 25 WERE CONSIDERED NEGLIGIBLE OR NONEXISTANT.







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REPORT OF FLOOD
TROPICAL STORM AGNES, JUNE 1972
OSWEGO RIVER BASIN

STAGE-DAMAGE CURVES

NON-AGRICULTURAL

U.S. ARMY ENGINEER DISTRICT, BUFFALO
AUGUST 1973

DAMAGE PREVENTED BY CORPS OF ENGINEERS PROJECTS

There are several Corps projects completed in the Oswego River Basin. A brief summary of these projects is as follows:

Syracuse - This project on Onondaga Creek, consists of two sections. One is the Onondaga Reservoir which is located four miles south of Syracuse and the other is 2.1 miles of channel widening, deepening, and straightening of the creek in the southern part of Syracuse. Includes improvements at Nedrow.

Montour Falls - This project is located in the Village of Montour Falls just south of Seneca Lake. It consists of works on Catharine Creek and a tributary, Shequaga Creek and is designed to protect the Village of Montour Falls against the flood of record.

Moravia - The project at Moravia consists of improvements along Owasco Inlet, Mill Creek and Dry Creek. It reduces flood stages from Moravia to Owasco Lake.

Geneva - The project consists of channel and bridge work along Marsh Creek just north of Seneca Lake.

Auburn - This project consists of channel improvement from Owasco Lake downstream to the State Dam, modification of the dam and adoption of a regulation schedule for the dam.

Ithaca - This project involved major realignment and improvement of Cayuga Lake Inlet and a drop structure at the upstream end of the channel improvement. It reduces flood damage in the City of Ithaca.

There are several clearing and snagging projects which are not mentioned here.

Table 23 which follows lists damages prevented by these projects.

TABLE 23. - Estimated Damage Prevented by Corps of Engineers Projects in the Oswego River Basin. (1)

Project	Estimated Damage Prevented: Accumulative total prior to June 1972	June 1972 Flood	Total After Flood
	$	$	$
Syracuse	2,213,000	463,000	2,676,000
Montour Falls	1,103,000	400,000	1,503,000
Moravia	327,000	100,000	427,000
Geneva	124,000	46,000	170,000
Auburn	354,000	5,026,000	5,380,000
Ithaca	533,000	1,375,000	1,908,000
TOTAL	4,654,000	7,410,000	12,064,000

(1) There are several clearing and snagging projects in the basin for which economic analyses are not available.

ESTIMATED DAMAGE TO EXISTING CORPS OF ENGINEERS PROJECTS

While all of the Corps of Engineers projects contributed to the reduction of flood damage in the Oswego River Basin, several of them were damaged. Table 24 below lists the estimated damage.

Table 24. - Estimated Damage to Existing Corps of Engineers Projects

Project Name	Estimated Damage
	$
Camillus-Nine Mile Creek	27,000
Hammondsport-Glen Brook	14,000
Ithaca-Cayuga Lake Inlet	600,000
Jordan-Skaneateles Lake Outlet	5,000
Montour Falls-Seneca Lake Inlet	18,000
Moravia-Owasco Lake Inlet	32,000
Port Byron-Owasco Lake Outlet	22,000
Weedsport-Skaneateles Lake Outlet	10,000
TOTAL	728,000

ACTIVITIES OF OTHER AGENCIES

General

Close coordination between local, State, and Federal agencies having disaster responsibilities eased the situation and reduced the amount of inconvenience resulting from tropical storm "Agnes." A summary of the activities of the agencies which provided major disaster and relief assistance to the communities is listed in subsequent paragraphs.

Federal Agencies

Department of Agriculture

Surplus food and food stamps were made available to relief organizations. Services to meet the emergency need of the disaster-stricken farmers were made through emergency loans.

The Soil Conservation Service (SCS) gave technical assistance to flood-stricken farmers and assessed agricultural damage in the Oswego River Basin. The SCS, Syracuse Office, provided the data on agricultural damages used in this report.

Department of Commerce

The National Weather Service, National Oceanic and Atmospheric Administration, had the responsibility of forecast and warning for river flooding.

Military

Personnel and equipment from the U.S. Army, Coast Guard, Navy and National Guard were provided to many communities throughout the disaster area. Major duties included security and traffic control,

evacuation, rescue, and resupply by helicopter and boat, cleanup, communication support, and damage assessment.

Department of Health, Education and Welfare

The Food and Drug Administration assisted State and local governments in the inspection of damaged food supplies for contamination from flood waters. Assistance was also given in emergency health activities and sanitation.

Department of Housing and Urban Development (HUD)

HUD-owned housing was provided to many families whose homes were destroyed by flood waters. Trailers were available for up to one year to allow people to rebuild their homes.

Office of Emergency Planning (OEP)

OEP provided assistance to political subdivisions to alleviate the effects of disaster by making funds available for the emergency protective works constructed to protect the public and private property, restore essential community facilities after the flood and remove debris from public and private property, restore where a health hazard was present. Damage Survey teams were comprised of personnel from the Corps of Engineers, Environmental Protection Agency, Department of Transportation and New York State Department of Environmental Conservation.

Small Business Administration (SBA)

SBA established field offices in a number of communities for the purpose of making their program available to flood victims. Long term loans were provided for repairing or rebuilding residential units, business and commercial places and industrial plants damaged by the storm.

Department of Transportation

The Federal Highway Administration provided assistance in restoring

roads and bridges in the Federal Aid System.

U.S. Geological Survey (USGS)

During and after the flood, USGS went into the field and collected stream flow data for the flood.

State Agencies

State Department of Agriculture (NYSDA)

NYSDA assisted the USDA in the survey of crop damage.

Civil Defense

State civil defense offices located in each county established communications with damaged areas and coordinated requests for assistance. CD offices in undamaged areas were on alert in order to provide assistance as necessary. The Federal Defense Civil Preparedness Agency supplied counties with essential flood fighting equipment.

Department of Environmental Conservation (DEC)

Personnel from DEC worked with Federal representatives in preparing damage survey reports and final inspection of work. The Western Regional Office in Buffalo assisted in preparing a frequency analysis of tropical storm "Agnes" in the Genesee River Basin.

State Department of Transportation (NYSDOT)

NYSDOT committed personnel and equipment to keep roads and bridges open and clear from debris (to the extent possible).

State Police

State police provided early warning of rising flood conditions, traffic control and rerouted traffic.

County Agencies

Highway Department

Personnel and equipment fought flood waters to maintain traffic flow on emergency supply routes and provided repair of roads and bridges.

Other Agencies

Firemen

Personnel and equipment worked many hours on rescue missions, pumping out flooded basements and other essential duties.

Local Police

Early warning of flood condition, traffic control, rerouting traffic, and rescue missions were their primary duties.

Service Groups

The Mennonite Disaster Service, American National Red Cross, The Salvation Army, and other relief disaster assistance organizations established and operated shelters which provided lodging and food to thousands of people throughout the disaster area.

Many individuals not related to service groups provided flood victims with shelter, food, clothing, and helped in the task of clean-up from tropical storm "Agnes."

ENVIRONMENTAL ASSESSMENT

Introduction

Floods, often a serious threat to man's existence, are a naturally occurring phenomena that can have far reaching ecological consequences. They should not be viewed as being completely destructive to the fish, wildlife, and vegetation resources of a given area, but instead must be looked upon as an agent capable of bringing about an abrupt change in the overall composition of the environment. Areas appearing to be totally devastated by the ravages of flood waters will be re-invaded quickly by various species of plants and animals. The time required for reestablishment can be short or may extend over a period of several decades for certain uncommon or rare varieties which were formerly present.

Historically, floodwater inundation having occurred periodically for hundreds of years has resulted in the evolution of certain plant and animal communities adapted to life in such an unstable environment. Typically, a number of plant genera have adapted so well that they can survive the effects of flooding for long periods and are even able to thrive under such conditions.

Damage wrought by mechanical forces is obvious and often spectacular, trees are uprooted, wildlife is ravaged or displaced and soil and rock are transported great distances. The entire food web is disrupted but often makes a startling comeback within a short period of time.

Generally, after a flood, the first organisms to become abundant are those at the bottom of the food chain of which the most important are the insects and various invertebrate forms. As time passes,

other oganisms will likewise begin to occupy their position in the food web. However, those individuals at the top of the food chain will require an extended period of time to establish themselves especially if they were originally uncommon to the area.

There are certain factors which control the repopulation rate of a flooded area by various organisms. (A) The maturity of the habitat is an important consideration. Severe alteration of an environment will often result in the invasion of an area by a new group of plants and animals totally different from those formerly occupying the site. In an area where a mature forest and its topsoil were washed away it can be expected that the fauna of this site would not be the same for many decades and may never reach the original species composition that was predominant prior to the flood. Conversely, a grassy riverbank which suffered minor alterations as a result of flooding may reestablish itself within a period of several years. Here the species composition may be similar or the same as that present before the flood. (B) Secondly, another significant factor controlling repopulation is the extent of physical destruction of vegetation. Plants play an important role in the interrelation of various communities by providing a protective shelter, breeding site, and in some cases a major food source for a wide variety of wildlife. When plant cover is present, runoff and erosion is significantly reduced. (C) Siltation and erosion also have a pronounced effect on the environment. Silt deposits effectively prevent root systems of plants from functioning properly ultimately causing death to the affected vegetation. Fine particles of sediment left behind by floodwaters will form a compact layer somewhat impervious to water seepage and for this reason may increase the rate of water runoff thus, causing erosion. The hard compact layer may also reduce the ability of invading vegetation to take root

and establish itself. (D) Ponding is another serious result of flooding that can have a profound effect on the ecosystem. In order for plant growth to occur, diffusion of oxygen, carbon dioxide and other gases must occur through the soil, so that respiration can take place in the root system. The resistance to this type of diffusion afforded by a layer of water on the soil surface is much higher than normal and generally plants will begin to die when the efficiency of gaseous exchange into root system is diminished.

The actual effects of high water velocity and flooding also have immediate adverse effects on the local fish and wildlife: (A) Fish are particularly affected by flooding, initially by physical shock and abrasion, interruption of feeding or elimination of food sources, suffocation due to silt loading of gills, and death resulting from entrapment in shallow land locked pools. Recently hatched fry and fingerlings will usually suffer the greatest losses. The 1972 "Agnes" flood hit at a time when many species of fish were actually spawning or had done so only a short time earlier. Fry of this year's class represented the brood stock for many future generations. (B) Wildlife is also affected by the suddeness and violence associated with the flood itself and the heavy rains accompanying it. Floods will destroy any wildlife in its path not fast enough to be able to move out of the way. The young are the most susceptible to the ravages of high water while the adults are generally quick enough to escape. Prolonged rainfall will fill nests that are capable of holding water causing the young to drown or eventually die from exposure. Insects will usually be practically eliminated so that their short supply will cause starvation in those organisms which utilize large quantities of insects as a major portion of their diet.

The most profound ramification of flooding is that increased urbanization of watersheds, swamp and marsh drainage, poor logging practices, and mismanagement of agricultural lands has appreciably

depleted the natural ability of watersheds to utilize and store runoff. Consequently, flooding exceeds the natural norms and lands not previously accustomed to flooding will be increasingly altered causing severe damage to the watershed and downstream areas.

Environmental Resources

(A) General

The size of this basin, together with the diversity of wildlife habitat that it offers, is responsible for the existence of a rich and varied wildlife resource. Part of the basin falls within the best agricultural wildlife habitat in New York State. Other parts comprise good forest wildlife habitat while the basin also includes the largest tracts of productive interior wetland habitat in the State.

1. Forest Wildlife

The largest section of forest wildlife habitat is found in the northeastern portion of the basin. This area, forming part of the Tug Hill Plateau, is heavily forested and only moderately settled with many of the areas inaccessible. In some places the forest cover is interrupted by the presence of a few scattered dairy farms, but for the most part, agriculture is of marginal value in this portion of the basin. The forest-game species include bear, white tailed deer, ruffed grouse, gray squirrel, snowshoe hare, and woodchuck. Such fur-bearing animals as the red fox, gray fox, mink, otter, racoon, and weasel also occur abundantly. Although food and cover conditions appear excellent for deer, their abundance in the Tug Hill area is not as great as might be expected when compared to the deer populations in the Adirondack Mountains a short distance to the east. Grouse, snowshoe hare, and gray squirrels are plentiful with the first two being very popular with local sportsmen.

Although not as compact a section of forest land as the northeastern section, the southern half of the Oswego River Basin contains a large amount of forest wildlife habitat. The northern extremities of the Finger Lakes lie in the flat and agricultural Lake plain area, but the southern portions are surrounded by the more rugged uplands of the Allegany Plateau. Here there are extensive acreages of forest land and abandoned, reverting agricultural land on the ridges separated by farmland in the valley bottoms. Forest wildlife species found in this portion of the basin are identical to those inhabiting the Tug Hill Plateau except that bears are no longer found in the southern portion. Attempts are being made to reestablish the wild turkey population of this area. The wildlife productivity of this southern forested area is very high, especially for white tailed deer. Hunting pressure is higher here than in the northeastern forest area of the basin. Scattered traces of woodland, as well as farm woodlots, are found throughout the remainder of the Basin.

2. Agricultural Wildlife

In this segment of the Basin, agricultural wildlife consists principally of the cottontail rabbit and ringnecked pheasant. The gray squirrel also occurs here, but is confined primarily to the farm woodlot, while the woodchuck can be found throughout the area. In addition, certain fur-bearing animals among them the skunk, gray fox, red fox, racoon, and opposum are able to find a great deal of suitable habitat in and around the agricultural portion of the Basin. Most of the wildlife already mentioned can be found typically throughout the area, but the best and most productive agricultural wildlife habitat is located in the Lake Plains region of the Basin. Swamps, marshes, woodlots, and open lands reverting to forest provide an excellent cover for ringnecked pheasants and cottontail rabbits both of which are fairly

abundant. In the transition zone between the Lake Plain in the north of the Basin and the steeply rolling terrain of the Allegheny Plateau in the south, there are integrations in the numbers and importance of the agricultural wildlife species.

3. Aquatic Wildlife

The principal wildlife groups in this classification are waterfowl, marsh and shore animals such as muskrat, mink, racoon, otter, and beaver. Almost every other form of wildlife however, may make partial use of aquatic habitat such as lake and stream margins, swamps, or marshes, particularly for escape or winter cover. Therefore, the various types of aquatic wildlife habitat which are grouped under the term "wetlands" possess a very high value for wildlife. The Oswego River Basin, together with the basins of the small streams tributary to Lake Ontario, located just to the north, contains the most important wetlands in New York State. The east-west line formed by the Seneca River and the New York State Barge Canal is the axis of the largest wetlands, but there are also large wetland areas in the vicinity of Oneida Lake. Scattered throughout the basin, particularly in the Lake Plains portion, are numerous small wetlands which augment the larger swamps and marshes in serving the needs of water fowl and other wildlife. The smaller wetlands furnish the bulk of the waterfowl breeding habitat for such species as black ducks, wood ducks, mallards, and blue-winged teal, as well as such marsh birds as rails and gallinules. The chief importance of the larger wetlands to waterfowl is for use during migration periods, although they receive some nesting utilization, particularly around their peripheries. Besides their value as a waterfowl area, the wetlands, both large and small, offer an excellent habitat for fur-bearing animals, especially muskrats.

4. Fishery Resources

The large area of the basin, coupled with its great variety and high productivity, makes the fishery of the Oswego River Basin one of the richest in New York State. Basically, the regional zones are: The Finger Lakes and their tributaries, Oneida Lake and its tributaries, the Seneca - Clyde Barge Canal - Oneida Oswego River Axis, and the smaller lakes and ponds of the basin.

A. Finger Lakes and their tributaries - There are six Finger Lakes namely Skaneateles, Owasco, Cayuga, Seneca, Keuka, and Canandaigua - that can be found within the confines of the Oswego River Basin. Although each lake has its own distinctive set of characteristics, all of the Finger Lakes have one feature in common, they are long and narrow with the long axis extending in a north-south direction. Despite variations in depth, all may be classified deep lakes with very limited shallow water areas.

The Finger Lakes possess both a cold water fishery consisting of rainbow trout, lake trout, and brown trout, and a warm water fishery of largemouth black bass, small mouth black bass, yellow perch and pickerel. The tremendous depths that prevail over the greater portion of each of the Finger Lakes provide conditions favorable for coldwater fish and, at the same time, confines the warm water species to the narrow bank of shallow water adjacent to the lake shoreline. The combination of well balanced populations and extensive forage areas forms the basis for the productivity of the Finger Lakes fishery. In addition, microscopic plankton provides support for such species as the alewife, cisco and smelt which in turn provide forage for lake trout, rainbow trout, and brown trout.

The tributaries of the Finger Lakes play a very important part

in maintaining the productivity. Although, certain species such as the lake trout spawn in both the depths and shallows of the lakes themselves and others like the bass and perch spawn only in the shallows, many other game and forage fish such as the rainbow trout, brown trout, and smelt depend on the tributaries for spawning purposes. Besides serving as a spawning grounds for several species of fish, some of the tributaries are large enough to support a permanent trout fishery of their own. These include all or part of the following: Skaneateles Inlet, Owasco Inlet, Fall Creek, Taughannock Creek, Naples Creek, Cayuga Inlet, and Catharine Creek.

B. Oneida Lake and its tributaries - Oneida Lake is the largest body of water totally within New York State, but unlike the Finger Lakes, it is a relatively shallow body of water. The shoreline of the lake is low and flat with swampy areas on all sides. Productivity is high, not only for game fish but also for non-game fish such as carp, curbot, alewife, sucker and eel.

The tributaries of Oneida Lake include a number of important fishing streams with their importance lying in the stream fishery they support and also in the use made of the lower reaches of some of these streams for spawning runs of lake species. Some of the more important tributaries are Fish, Oneida, Chittenango, Cowaselon, Canaseraga, and Seriba Creeks. The eastbranch of Fish Creek, Chittenango, and Canaseraga Creeks support either a brook or a brown trout fishery, while Oneida and Cowaselon Creeks are bass streams. The lower reaches of all the tributaries of the Lake serve as spawning areas for many of the species inhabiting the Lake.

The Seneca - Clyde Barge Canal - Oneida - Oswego River

Axis - Long Stretches of the rivers of this group have been channelized or else the New York State Barge Canal runs parallel or closely adjacent to them. Flow in the larger streams tends to be slow and the greater part of the system may be classified as a warm water fishery habitat including such species as largemouth black bass, yellow perch, chain pickerel, carp, and bullheads, as well as yellow pike perch and northern pike along certain reaches. Certain streams such as Carpenter Brook, which flow into the Seneca River, support some trout fishing.

C. Smaller Lakes and Ponds - The total pond area of the Basin exclusive of the Finger Lakes, Onondaga, Otisco, and Oneida Lakes, and all ponds posted against public use, is about 6,900 acres, of which 137 acres may be classified as brook trout habitat, 316 acres as rainbow trout habitat, 2,334 acres as largemouth bass habitat. The largest trout ponds found in this area consist of Oneida Reservoir of 60 acres on Florence Creek, Green Lake of 62 acres in the Chittenango Creek System, Lake Como of 52 acres in the Fall Creek Drainage and Potters Falls Reservoir of 192 acres on Six Mile Creek. Warm water lakes and ponds in the basin cover 12,600 acres, of which 15 contains 160 acres or more.

5. Forest Land Resources

Forests of the Basin are important in the control of erosion and sedimentation and play an important role in the maintenance of watersheds. The principal trees found in the Basin include sugar maple, ash, oak, black cherry, and yellow poplar.

Environmental Impact

A. Fisheries

Hurricane "Agnes" has had a marked impact on the fishery resources of the Oswego River Basin causing physical injury or death to many

species of fish, turbidity, loss of vegetation, erosion runoff, and in some cases total obliteration of the habitat.

Fish are generally accustomed to seasonal changes in current velocity and rate of water volume discharge in the streams or creeks in which they live. It is doubtful that the effects of high currents and water volume would be entirely responsible for the elimination of fish populations. During periods of average velocity fish usually orient themselves so as to face the current, but during abnormally high flows they will seek protection behind rocks or large pieces of debris. However, the turbid water conditions generated throughout the Basin by Hurricane "Agnes" prevented the fish from locating these protective areas and as a result many were displaced farther downstream or swept over the banks of the river by high currents. The violent currents also caused physical injury to the fish as they transported rocks and debris. Sand particles acted as an abrasive to the flesh, while silt caused suffocation as it clogged the gills and opercular cavities of many fish. It is during this violent process that many fingerlings were killed and most of the newly spawned eggs were carried away. Adults swept into inundated areas were later trapped as the waters receded, eventually causing death.

Benthic invertebrates were also subjected to the same stresses as explained above. Midge and black flies recovered very quickly after the dissipation of "Agnes", but other species such as the mayfly, caddisfly, and stonefly nymphs took a much longer time to re-establish themselves. Certain benthic organisms require specific substrate characteristics in order to become abundant, but as their habitat was covered by a thick layer of silt proliferation was proportionately curtailed. An overall decrease and slow return of these organisms could affect the growth of fish inhabiting the area, but

the radical changes imposed by the storm did provide some natural compensation. Many species of fish present in the Basin feed on terrestrial invertebrates as part of their regular diet, but the turbulence and flooding made more of these invertebrate available than usual, thus partially delaying the food crisis. The time lag was sufficient enough to allow partial regeneration of the benthic fauna.

Practically every tributary in the Oswego River Basin was subjected to heavy sediment loading. Deposits of gravel and other heavier material settled out as the current slowed, often completely filling the former streambed. In many cases bridges and other structures traversing the creek were observed to be literally resting on huge accumulations of rock and gravel. Riffles and clear running water habitat formerly used as breeding sites or feeding areas by trout were covered by heavy deposits of silt. However, some areas which were loaded with silt prior to the storm were scoured clean and could now provide a suitable habitat for the displaced fish. Again, this illustrates that even the most severe storm is a natural phenomena destructive in one area and creative in another.

After "Agnes" subsided the various sediment filled tributaries were no longer capable of transporting water and the rate of flow in these streams was seriously impaired. Heavy equipment was brought in to reopen the clogged channels. Generally, operations consisted of using one or more bulldozers to push the accumulated sediment up toward the river banks forming a gentle even slope. All of the debris was removed from the creek bed as well as most of the damaged trees or other vegetation located on the adjacent shore. Sediments piled up during the cleanup operations caused the resolubilization of nutrients, oxygen demanding materials and pesticides, all of which are capable of disrupting or altering the aquatic environment.

After the sediment was removed, the stream beds often consisted of a series of shallow pools with little running water. This effect had a marked impact on the migratory movements and behavior of the remaining fish.

The river banks were in many instances barren of vegetation either because of the natural activity of the floodwaters or because of the subsequent sediment relocation operations discussed above. Consequently, the exposed sediment eroded sending large amounts of material downstream to build up in other areas. The erosive process and the accompanying turbidity will have a long range effect on the rate of recolonization of the area by fish, and as it continues, habitats downstream once suitable as feeding areas or breeding sites will be obliterated by silt and sediment. In addition, the runoff reaching the stream, depending on the type of watershed, can contain high concentrations of nutrients, pesticides, herbicides, or other biocides, which can have a deleterious effect on the fish populations of the area.

In conclusion, both a short and long term impact will be evident in the Oswego River Basin with an age class of fish noticeably missing among the rainbow trout. The short term effects will encompass the loss of the eggs and fingerlings of various fish spawning at the time of the storm, while the long term effects will center around the loss of habitat resulting from continued erosion of barren stream banks and the resulting turbidity.

(B) Wildlife

1. Birds and Waterfowl

Hurricane "Agnes" arrived at a time of year when much of the wildlife in the Oswego River Basin was nesting or involved in raising young. Waterfowl and birds were greatly affected not only by the

steady downpouring rain, but also by the cold weather which preceded the storm. The effects suffered by the mammals and other wildlife were generally insignificant, with certain exceptions, when compared to the overall effects experienced by the waterfowl and bird life of the area.

Most of the waterfowl and upland game birds in the Oswego River Basin nested directly in the flood plain with many of the nests containing eggs or downy young by the middle of June. Cold weather preceded the "Agnes" storm front, causing a high mortality rate among the immature birds. Following the low temperature came the steady torrential rains which soaked the young, drowning them, often in their own nest, while those that survived the rain eventually succumbed to the chilling and general exposure to the elements. The fury of the storm also severely diminished the insect populations, so that such varieties of birds as the swallow, purple martin, chimney swift, and common nighthawk were left without a food supply. Thus, starvation was commonly the cause of death in these birds. In addition, feed crops such as buckwheat were also heavily damaged in some wetland areas causing the waterfowl inhabiting these sites to move on to other areas where the food supply was more abundant.

In the case of the waterfowl populations which were severely ravaged by "Agnes" most of the species inhabiting the flood plain have wide breeding ranges outside the geographic area of the storm and could easily reinvade the areas when conditions again become more favorable. Upland game birds such as the ruffed goose, turkey, ringnecked pheasant, and bobwhite did renest following the storm so that their numbers did not become dangerously low. However, on Oneida Lake, a colony of several hundred common terns nested very late because the water levels normally high in the spring continued to remain high throughout the month of June due to Hurricane "Agnes."

Generally, birds have evolved over many hundreds of thousands of years so that on the scale of time, "Agnes" merely occupied an insignificant amount of time. Species not able to cope with the elements have long since disappeared from the face of the earth.

2. Mammals and Other Wildlife

The remaining wildlife inhabiting the Basin were either well adapted to inclement weather or were prolific enough to repopulate the battered lands once "Agnes" left the area. The overall impact on wildlife in the basin was minimal, but some species such as snakes, mice, and amphibians inhabiting the flood plain or streambank areas were undoubtedly drowned as the flood waters rose. Several reports indicate that some adult deer and their offspring were caught in the on-rushing waters and were also drowned. Perhaps the most profound effect "Agnes" had on the basin wildlife was the devastation of isolated river islands. These islands are typically inhabited by woodchuck; eastern chipmunk, racoon, and striped skunk. As the waters rose, birds and aquatic organisms were able to escape, but the terrestrial animals inhabiting these areas subsequently drowned as each island was inundated. The repopulation of this territory, if it occurs, will take a very long period of time.

After the flood waters subsided, the grain feeding mammals reproduced very quickly, becoming quite abundant. The same storm that originally reduced their numbers also reduced a similar number of their predators as well, so that ultimately the rodent populations increased unchecked for some period of time.

As the flood waters generated by "Agnes" subsided, many areas, formerly wildlife habitats, were covered by a thick layer of silt. Eventually, the silt will be invaded by weeds and brambles and soon after the organisms which depend on them as a food source will also become established in the area. As time passes, the bramble-weed environment will give rise to scrub vegetation and eventually trees. Each time succession occurs, a new group of organisms will readily invade the area.

(C) Erosion and Water Quality

The quality of the water runoff and the erosive force exerted on the land will be significant factors in the future productivity and habitability of the rivers and streams in the Oswego River Basin. Erosion will continue for many years, causing turbidity and partial or complete obliteration of downstream habitats. Water draining quickly off the land, depending on the watershed, often contains large quantities of dissolved solids such as nutrients, pesticides, herbicides, and fungicides. Therefore, the heavy rainfall, runoff, and erosion generated by Hurricane "Agnes" will have a significant long and short term impact on the Oswego River Basin as a whole.

Turbidity has already been discussed in relation to its effects on the basin fish population. Generally, turbid conditions were caused as water runoff, generated by heavy rains, picked up large quantities of particulate matter depositing it in the many tributaries throughout the basin including the six Finger Lakes. The material which remained suspended for long periods of time shielded out a large portion of natural light preventing the growth of aquatic plants that under normal conditions, would provide protection, stability, and oxygen to the lotic environment.

Erosion caused by runoff will continue unchecked until the terrestrial vegetation, washed away by "Agnes" or removed during subsequent cleanup operations, can reestablish itself. During this reestablishment period, the erosion process is expected to recur every time there is moderate to heavy precipitation in the Basin. Thus, conditions of turbidity and loss of stream bottom habitat through siltation can be expected to occur for quite some time.

The quality of the runoff pouring into the tributaries was another important environmental consideration. Excessive rainfall, which accompanied the "Agnes" storm front, leached enormous quantities of dissolved solids from the soils of the Basin, especially in agricultural areas. Once present in the waters, the dissolved nutrients combining with the unshaded sunlight would stimulate the growth of aquatic and free floating plants causing rapid increase in numbers and a possible species imbalance. As the process continued, dead and dying vegetation would be naturally broken down eventually depleting the dissolved oxygen present in the surrounding waters. Particulate matter not utilized during this stage often becomes concentrated in the stream sediments where it can be released periodically during periods of high flow.

Clays and humus type soils are readily able to absorb chlorinated hydrocarbons which are found in various pesticides and herbicides. "Agnes" occurred at a time when heavy pesticide applications were underway throughout the agricultural areas of the basin. During the storm, the leaching process caused by the heavy rains was probably of short duration, but some of these chlorinated hydrocarbons released into the tributaries with the runoff water may have found their way into the bottom sediments where they could be released slowly or during periods of high flow.

In other areas of the Oswego Flood Plain large stockpiles of herbicides and pesticides were maintained in anticipation of their use during the early summer months of 1972. When the flood waters inundated vast portions of farmland, many of these stockpiles were swept away or were partially damaged with most of the detrimental chemicals ending up in the downstream reaches or the Finger Lakes as the flood waters receded. The flood waters generated by "Agnes" were also responsible for the overflow and disruption of many sewage treatment facilities located along the tributaries of the Oswego River. Severed sewer lines and badly damaged processing plants continued to dump raw sewage into nearby streams until the proper repairs could be made. Throughout New York State, approximately 2.5 billion gallons of untreated sewage was discharged into receiving streams as a result of the flooding caused by "Agnes."

Oil spills and leakage associated with the devastation brought about by Agnes" will most likely have a significant effect on the benthic fauna inhabiting the slower reaches of the various streams in the Oswego River Basin. However, significant fish kills associated with the spillage of oil or petroleum products, were not reported to have occurred.

(D) Vegetation

Timber losses occurring in the flood plain during late June, resulting from the Hurricane "Agnes" storm front, could be attributed directly to the high water velocity eroding and exposing root systems, and the presence of dissolved solids in the flood waters. During periods of high flow, debris and gravel rapidly transported throughout the flood plain caused abrasion and damage to the bark of many trees. This girdling effect left the tree trunks exposed to the effects of the weather, insect infestations, and disease.

Basically, trees and vegetation along the streambanks serve a dual purpose by resisting the effects of erosion and providing shade to the aquatic environment. During the "Agnes" flood, it was observed that where vegetation was heavy along the streambanks, the swollen river or creek tended to stay in channel, while in areas where the vegetation was sparse, the water tended to braid in and out of the channel. However, despite the heavy vegetation many trees were washed downstream where they collected into log jams further restricting the flow of water.

In the Oswego River Basin, some timber damage did occur in addition to the loss of streambank vegetation already described. Near Seneca Falls, some 4,500 acres of low marshy land was inundated, but even though much of the vegetation was adapted to periodic flooding, many of the younger trees present such as white oak, ash, red maple, and elm were affected to some extent. At the western edge of the Basin near Bristol Mountain, a mud slide occurred which totally devastated about 7-10 acres of forest hardwood trees.

After the storm had subsided, cleanup operations were instituted. Streambank debris were removed, fallen trees were cut up, and damaged vegetation chopped away. Most of the material accumulated during the cleanup process was hauled away to be buried at land fill sites or burned in open pits.

The magnitude of the storm was capable of altering the species distribution of the Basin. Plant seeds and spores were carried downstream for considerable distances to be deposited in areas where they formerly did not occur. Thus, the ecological balance of the downstream flood plain areas may be upset by the establishment of new varieties of vegetation. If for example, the new vegetation established itself on the open agricultural lands throughout

the Oswego River Basin, then more herbicides would be required to keep the land free of these invading plants.

The topsoil in many areas was stripped away carrying with it the microbial populations which are responsible for the fixation of Nitrogen and other nutrient materials in the soil. This factor will be a strong determinant in the rate at which plants reinvade the area and the types of species able to thrive in such an environment.

Loss of vegetation can have significant effects on many other organisms which depend on it either directly or indirectly. Without the shade and cooling effects of trees and shrubs; streams can rise as much as 12^{o}F above the usual normal temperature. During the summer months, slow moving waters in areas without vegetation become very warm, but even with this increase, most fish are capable of withstanding temperature fluctuations since they are already accustomed to seasonal variations. Although, the temperatures are not necessarily lethal, the increase can be significant enough to interrupt or cause premature spawning or affect the normal migration patterns of the resident fish.

Higher temperatures generally cause a decrease in the dissolved oxygen content of the water and a corresponding increase in the rate of oxygen consumption by the organisms inhabiting the aquatic environment. After the stream cleanup operations were completed, many shallow pools remained which were high in temperature and low in dissolved oxygen. Fish would congregate in these pools where they would be exposed to predation by terrestrial animals.

Removal of the natural cover will cause a change in the behavior patterns of fish in response to changes in the duration

of sunlight. The impact of this situation will be the disruption of feeding habits.

Until the streamside habitat is stabilized by terrestrial and aquatic plant growth, erosion will continue and many areas will be covered by silt. Runoff associated with erosion can often contain significant quantities of herbicides which can retard the growth of vegetation. The toxic plant chemicals can have an immediate effect or they can be deposited along with the silt and slowly released over a long period of time.

(E) The Effects of Ponding

Large expanses of agricultural land and many tracts of woodland surrounding the tributaries of the Basin were totally inundated by the heavy rains generated during the "Agnes" hurricane. As the flood waters receded, ponds began to form. Much of the accumulated water could be found in low-lying areas where there was little or no drainage. Consequently, a great number of these ponds already loaded with dissolved soilds and sediment, became quickly polluted.

Mosquitoes often lay their eggs in wooded areas as well as on the surface of stagnant water, so that when the ponding occurred, viable eggs were already developing along with fresh eggs laid by mosquitoes reinvading the area. Within a short time, the mosquito population in the Oswego River Basin increased immensely, causing a great deal of concern.

Emergency spraying programs were instituted using dibrom and vapona insecticides in an effort to control the rising mosquito population.

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
1 OF 3	211945Z	PP			UU			21	Jun	72

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE)//DAEN-CWO-E//
and
DIVENGR NORTH CENTRAL (NCDED)

INFO: SEE ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 1 - ATTN: DAEN-CWO-E.

2. THE POTENTIAL FOR FLOODING EXISTS IN MANY AREAS IN THE BUFFALO DISTRICT. PRESENTLY THE MAIN AREA OF CONCERN IS ON THE GENESEE RIVER AT WELLSVILLE, NY. AN UNOFFICIAL 7 INCHES OF RAIN HAS BEEN REPORTED AT WELLSVILLE WITH AN ADDITIONAL 2 INCHES FORECAST FOR TODAY.

3. WE HAVE DISPATCHED FOUR MEN TO WELLSVILLE TO AID IN FLOOD FIGHTING OPERATIONS AND TO DETERMINE THE AMOUNT AND TYPE OF DAMAGE RESULTING FROM THE HIGHWATER OCCURRENCE. THESE MEN HAVE NOT BEEN ABLE TO APPROACH THE CITY, BUT, HAVE REPORTED:

A. THE CITY HOSPITAL IS WITHOUT ELECTRIC POWER AND THE AUXILIARY GENERATOR HAS BEEN KNOCKED OUT. A PORTION OF THE HOSPITAL HAS BEEN EVACUATED.

B. THE RED CROSS HAS TAKEN OVER THE TWO HOTELS IN THE CITY TO PLACE 300 PEOPLE WHO HAVE BEEN EVACUATED.

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 1

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

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2 OF 3										

BOOK — MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

C. THE MILLER STREET BRIDGE HAS BEEN WASHED OUT AND THERE IS A DANGER TO THE EXISTING FLOOD CONTROL PROJECT. ALL OTHER BRIDGES WITHIN THE CITY ARE IN DANGER.

D. THE WATER AND LIGHT PLANT IS COMPLETELY OUT OF SERVICE AND COMMUNICATION WITHIN THE CITY IS IMPOSSIBLE.

E. ALL ROADS TO THE CITY ARE INUNDATED AND ACCESS TO THE CITY IS IMPOSSIBLE EXCEPT BY TRUCK AND AIR.

F. NO DEATHS HAVE BEEN REPORTED.

G. THE STATE HAS DISPATCHED A HELICOPTER AND TWO TRUCKS WITH GENERATORS TO THE AREA.

H. PROPANE TANKS ARE REPORTED TO HAVE FLOATED FROM A STORAGE AREA TO THE GENESEE RIVER.

4. THE FLOOD OF RECORD AT SCIO (3 MILES DOWNSTREAM OF WELLSVILLE) WAS 23,300 CFS AT A STAGE OF 11.22 FEET IN NOVEMBER 1950. THE LATEST STAGE RECORDED, 21 JUNE 1972, AT SCIO WAS 12.5 FEET. THE GAGE HAS SINCE BEEN WASHED OUT.

5. THE REGULATION OF MT. MORRIS LAKE WILL PREVENT FLOOD DAMAGES IN THE LOWER GENESEE VALLEY EXCEPT FOR THE CANASERAGA CREEK VALLEY.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 1 (Cont'd)

JOINT MESSAGEFORM | **SECURITY CLASSIFICATION**

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 3										

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

6. THE FLOOD STAGE AT GROVELAND ON CANASERAGA CREEK IS 11.0 FEET. REPORTED STAGES AT GROVELAND ARE:

0730 HOURS	7.88 FEET
0930 HOURS	12.10 FEET
1300 HOURS	14.37 FEET

7. THE CANASERAGA CREEK VALLEY IS INUNDATED AND CROPS HAVE BEEN DAMAGED. HEAVY RAIN IS STILL OCCURRING AND CONDITIONS ARE EXPECTED TO GET WORSE.

8. A FLOOD WATCH IS IN EFFECT FOR MOST OF THE SOUTHERN COUNTIES IN WESTERN NEW YORK.

9. OTHER AREAS OF CONCERN, HOWEVER, NOT WITHIN THE BUFFALO DISTRICT ARE THE VILLAGE OF ALMOND AND THE CITY OF HORNELL. UNOFFICIAL REPORTS ARE THAT:

A. THE VILLAGE OF ALMOND HAS BEEN EVACUATED AND ONE DROWNING HAS OCCURRED.

B. THE DOWNTOWN AREA OF HORNELL HAS 2 FEET OF WATER AND THREE DROWNINGS HAVE OCCURRED.

10. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
S. A. MAIORE, Chief, Hydr. Br. NCBED-H X54

RELEASER
TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
BARRY G. ROUGHT, Ch, Engr. Div. BGR

SIGNATURE
LTC, RICHARD J. BARRETT
Acting District Engineer

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 1 (Cont'd)

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PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
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BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 2 - ATTN: DAEN-CWO-E.

2. SERIOUS FLOOD PROBLEMS IN THE UPPER GENESEE RIVER VALLEY STILL EXIST. IN ADDITION FLOOD POTENTIALS ARE DEVELOPING IN OTHER AREAS OF NEW YORK STATE BOTH IN AND OUT OF BUFFALO DISTRICT.

3. THE ACTING DISTRICT ENGINEER AND CHIEF, HYDRAULICS BRANCH ARE ON THEIR WAY TO WELLSVILLE, N.Y. TO MAKE A PERSONAL RECONNAISSANCE OF THE FLOOD SITUATION. IN ADDITION, THREE BUFFALO DISTRICT PERSONNEL ARE IN WELLSVILLE TO ASSIST IN FLOOD FIGHTING AND DETERMINE EXTENT OF DAMAGES. TWO OTHER DISTRICT PERSONNEL HAVE RETURNED TO BE REPLACED.

4. FLOODING IS A MAJOR PROBLEM ALONG MOST OF THE UPPER GENESEE RIVER VALLEY FROM WELLSVILLE TO PORTAGEVILLE, N. Y.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

RELEASER — TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 2

DD FORM 173 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE

JOINT MESSAGEFORM						SECURITY CLASSIFICATION UNCLASSIFIED		
PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH / YR
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BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

5. FLOOD DAMAGES FOR THE ENTIRE UPPER GENESEE RIVER VALLEY ARE NOT YET AVAILABLE. HOWEVER, CORPS OF ENGINEER PERSONNEL HAVE ESTIMATED DAMAGES IN WELLSVILLE:

A. TOTAL ESTIMATED DAMAGES IN WELLSVILLE ARE $3 MILLION.

1. $700,000 TO RESIDENTIAL DEVELOPMENTS. APPROXIMATELY 200-300 HOMES AFFECTED, MANY WITH 5 TO 6 FEET OF WATER ON THE FIRST FLOOR.

2. $300,000 TO PUBLIC FACILITIES.

3. $2,000,000 TO COMMERCIAL DEVELOPMENTS. ONE PLAZA WITH 6 STORES HAS 5 FEET OF WATER THROUGHOUT. PARKING LOT IS COMPLETELY BROKEN UP. AUTO DEALERSHIP IN DOWNTOWN AREA HAD 30 NEW AND 35 USED CARS INUNDATED.

6. HIGHWAY DISRUPTION IS EXTENSIVE THROUGHOUT ALLEGANY COUNTY; HOWEVER, NO HIGHWAY DAMAGES ARE ESTIMATED AT THIS TIME.

7. STRUCTURAL DAMAGES IN WELLSVILLE:

A. MILLER STREET BRIDGE WASHED OUT AND THE TRUSS IS IN THE CHANNEL APPROXIMATELY 1500 FEET DOWNSTREAM.

B. PEARL STREET BRIDGE WEAKENED. LEFT ABUTMENT COLLAPSED AND BRIDGE DROPPED ABOUT ONE FOOT.

C. MAIN STREET BRIDGE - LEFT DOWNSTREAM WING WALL HAS COLLAPSED.

DISTR:

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SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 2 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 5										

BOOK	MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

8. A WING OF THE LOCAL HOSPITAL HAS BEEN UNDERMINED NECESSITATING EVACUATION. SAND BAGS ARE BEING PROVIDED BY THE BUFFALO DISTRICT FOR AN ATTEMPT TO PREVENT THE HOSPITAL WING FROM COLLAPSING.

9. NO DEFINITE DAMAGES TO THE CORPS OF ENGINEER FLOOD CONTROL PROJECT HAS BEEN ESTABLISHED. SIGNS OF THE DROP STRUCTURE NEAR MILLER STREET ARE NOW VISIBLE. TOP OF LEVEES HAVE APPARENTLY BEEN EXCEEDED BY 20 TO 3 FEET.

10. OTHER INFORMATION IN GENESEE RIVER BASIN:

A. 600-700 PEOPLE EVACUATED THROUGHOUT ALLEGANY COUNTY.

B. ESTIMATED $200,000 RESIDENTIAL DAMAGES BETWEEN WELLSVILLE AND SCIO, N.Y.

C. AGRICULTURAL DAMAGES THROUGHOUT ALLEGANY COUNTY ARE EXTENSIVE.

D. SMALL TRIBUTARIES TO GENESEE RIVER ARE STILL ON THE RISE.

E. FLOOD DAMAGES ARE OCCURRING ALL ALONG THE UPPER GENESEE RIVER. SERIOUS FLOOD DAMAGES HAVE BEEN REPORTED IN PORTAGEVILLE, N.Y.

11. REGULATION OF MT. MORRIS LAKE HAS ELIMINATED DAMAGES, THUS FAR, FROM THE LOWER GENESEE RIVER VALLEY. INFLOWS TO MT. MORRIS REACHED AN ESTIMATED PEAK OF BETWEEN 70,000 TO 80,000 CFS. THE HEADWATER POOL AT 1600 HOURS 22 JUNE 1972 HAD RISEN 80 FEET SINCE 0800 ON 21 JUNE 1972. ABOUT 35 PERCENT OF THE RESERVOIR STORAGE IS

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EXHIBIT 2 (Cont'd)

JOINT MESSAGEFORM							SECURITY CLASSIFICATION			
PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
4 OF 5										
BOOK	MESSAGE HANDLING INSTRUCTIONS									

FROM:

TO:

NOW UTILIZED. EIGHTY FEET REMAINS TO THE SPILLWAY CREST. ADDITIONAL RAIN IN THE LOWER GENESEE VALLEY HAS PREVENTED AN INCREASE IN THE OUTFLOW FROM MT. MORRIS. CONTINUING RAINFALL IN THE UPPER GENESEE RIVER VALLEY WILL MAINTAIN A HIGH RATE OF INFLOW INTO MT. MORRIS FOR SEVERAL DAYS. WE EXPECT TO BE ABLE TO STORE THE MAJORITY OF THE INFLOW WHILE CONTROLLING THE OUTFLOW TO A NON-DAMAGING DISCHARGE. HOWEVER, UTILIZATION OF MT. MORRIS STORAGE CAPACITY IS EXPECTED TO BE NEAR 100 PERCENT.

12. THE CANASERAGA CREEK STAGE AT GROVELAND, N.Y. HAS RECEDED TO ABOUT INITIAL FLOOD STAGE. UNCONFIRMED AGRICULTURAL DAMAGES ARE $4,000,000 TO 20,000 ACRES OF FARMLAND.

13. THE NATIONAL WEATHER SERVICE HAS FORECASTED CONTINUING RAIN THROUGHOUT THE GENESEE RIVER BASIN. THE STORM CENTER IS EXPECTED TO MOVE FROM NORTHERN PENNSYLVANIA UP ALONG EASTERN NEW YORK. THIS WILL, MOST LIKELY, CAUSE FLOODING IN OTHER AREAS OF THE BUFFALO DISTRICT.

14. THE BUFFALO WEATHER SERVICE STATION HAS CHANGED THEIR ALERT IN WESTERN NEW YORK FROM A FLOOD WATCH TO A FLOOD WARNING. EXISTING CLOUD COVER COULD DROP 0.3 INCHES OF RAIN PER HOUR. RAIN IS FORECASTED TO CONTINUE THROUGHOUT TONIGHT AND TOMORROW.

DISTR:

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EXHIBIT 2 (Cont'd)

DD FORM 173

JOINT MESSAGEFORM

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PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE - TIME	MONTH	YR
5 OF 5									

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

15. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
CHARLES BALDI, Assc.Ch.Hyd.Br. NCBED-H

SPECIAL INSTRUCTIONS

RELEASER
TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
LARRY G. BOUGHT, Ch. Engrg. Div.

SIGNATURE
LTC. RICHARD J. BARRETT
Acting District Engineer

SECURITY CLASSIFICATION

DD FORM 173

AD-A101 235 CORPS OF ENGINEERS BUFFALO N Y BUFFALO DISTRICT F/G 8/8
REPORT OF FLOOD, TROPICAL STORM AGNES, JUN 1972, OSWEGO RIVER B--ETC(U)
AUG 73

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BOOK	MESSAGE HANDLING INSTRUCTIONS								

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCBED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 3 - ATTN: DAEN-CWO-E.

2. SERIOUS FLOODING PROBLEMS IN THE GENESEE RIVER STILL EXIST. IN ADDITION, FLOOD POTENTIALS EXIST IN OTHER AREAS OF NEW YORK STATE BOTH WITHIN AND OUTSIDE OF THE BUFFALO DISTRICT. MOST WESTERN NEW YORK STREAMS HAVE CRESTED AND ARE PRESENTLY RECEEDING. OLEAN AND SALAMANCA, NEW YORK HAVE BEEN PARTIALLY EVACUATED.

3. THE NORTH CENTRAL DIVISION ENGINEER AND THE ACTING DISTRICT ENGINEER ARE PRESENTLY IN WELLSVILLE MAKING A PERSONAL RECONNAISSANCE OF THE FLOOD SITUATION. THE FLOOD CREST OCCURRED AT APPROXIMATELY 0500 HOURS 23 JUNE, EXCEEDING THE PREVIOUS DAY'S CREST BY ABOUT ONE FOOT. THE ENDANGERED HOSPITAL WING COLLAPSED AT APPROXIMATELY 0700 HOURS. A NEARBY CHURCH RECREATION BUILDING WAS ALSO DESTROYED AT APPROXIMATELY THE SAME TIME. THE WATER LEVEL IN WELLSVILLE IS

DISTR:

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SIGNATURE	SECURITY CLASSIFICATION

EXHIBIT 3

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
2 OF 2										

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

PRESENTLY RECEEDING.

4. FLOODING IS A MAJOR PROBLEM IN THE GENESEE RIVER VALLEY ABOVE AND BELOW MT. MORRIS DAM. THE RISE IN WATER LEVEL BEHIND THE DAM HAS APPROXIMATED 3 FEET PER HOUR THROUGHOUT THE DAY. THE 1700 HOUR ELEVATION BEHIND MT. MORRIS DAM WAS 732.6; AT 1800 HOURS THE ELEVATION WAS 734.5, ABOUT 25 FEET BELOW THE SPILLWAY CREST. ALL 9 GATES ARE PRESENTLY OPEN, ONE AT 7 FEET, AND 8 AT 2 FEET, ALLOWING AN OUTFLOW OF 8088 CFS AT 1700 HOURS AND 8124 CFS AT 1800 HOURS. THE OUTFLOW WILL BE INCREASED TO 10,000 CFS AND MAINTAINED AT THAT RATE AS LONG AS POSSIBLE. PRESENT ESTIMATES INDICATE THAT IT MAY BE POSSIBLE TO AVOID USING THE SPILLWAY, THEREBY PREVENTING THE MASS OF DEBRIS FROM MOVING DOWNSTREAM AND BLOCKING THE RIVER. PRESENT READINGS AT DRIVING PARK, ROCHESTER ARE 19,000 CUBIC FEET PER SECOND, VERY NEAR FLOOD STAGE. AT AVON, 15 MILES NORTH OF THE DAM, THE FLOW IS 16,000 CFS, PRODUCING SOME FLOOD DAMAGE.

5. IN ORDER TO PREVENT THE GENESEE RIVER FROM OVERFLOWING ITS RIGHT BANK INTO THE URBAN AREA OF HENRIETTA AND BRIGHTON, MONROE COUNTY, THIS OFFICE WILL ASSIST AND OFFER TECHNICAL ADVICE IN THE CONSTRUCTION OF A SANDBAG LEVEE ON RIVER ROAD.

6. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE
S. MAIORE, Ch.Hydraulics Br., NCBED-H

SPECIAL INSTRUCTIONS

RELEASER

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
BARRY G. ROUGHT, Ch.Engineering Div.

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 3 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
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BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK AND OHIO

1. CATEGORY A FLOOD SITUATION REPORT NO. 4 - ATTN: DAEN-CWO-E.

2. FLOOD THREATS IN THE UPPER GENESEE RIVER BASIN HAVE PASSED. MINOR FLOODING EXISTS IN THE LOWER GENESEE RIVER BELOW MT. MORRIS DAM. MOST STREAMS IN WESTERN NEW YORK STATE ARE AT OR NEAR BANKFULL STAGE BUT ARE GENERALLY RECEDING. THE PRESIDENT DECLARED most of THE REGION A DISASTER AREA.

3. FLOOD SITUATIONS OCCURRED ON 23 JUNE ON SEVERAL RIVERS IN NORTH CENTRAL OHIO. A COMBINATION OF WIND AND HIGH LAKE LEVELS AND HIGH FLOWS ON THE CHAGRIN RIVER CAUSED THE EVACUATION OF 50 FAMILIES IN EASTLAKE, OHIO. FOUR HOMES WERE DESTROYED THERE. LAKE STAGE WAS 5.2 FEET ABOVE LOW WATER DATUM, WINDS UP TO 40 KNOTS FROM THE WNW CAUSED WAVES OF 12 TO 15 FEET. MAJOR DAMAGE OCCURRED TO DIKE DISPOSAL AREAS AND BREAKWATERS IN THE CLEVELAND OUTER HARBOR. THE CUYAHOGA RIVER ROSE TO

DISTR:

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SPECIAL INSTRUCTIONS

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SECURITY CLASSIFICATION

EXHIBIT 4

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2 OF 3										

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

BANKFULL STAGE AND BIG CREEK, A TRIBUTARY EXPERIENCED GREATER THAN A 100-YEAR FLOW. THE CLEVELAND ZOO WAS DAMAGED AND A VALUABLE GOAT EXHIBIT WAS LOST.

4. THE DISTRICT ENGINEER AND DEPUTY DISTRICT ENGINEER HAVE BEEN IN ROCHESTER, N.Y. AND THE GENESEE BASIN BELOW MT. MORRIS MAKING A RECONNAISSANCE OF THE SITUATION. ~~THE~~ PEAK OCCURRED AT ROCHESTER AT ABOUT 1600 HOURS 24 JUNE 72. STAGES REACHED THE LEVEL WHERE ONLY MINOR DAMAGE OCCURRED THROUGHOUT THE LOWER BASIN.

5. THE RISE IN WATER LEVELS BEHIND THE DAM HAS REDUCED TO ABOUT 0.4 FOOT PER HOUR. THE 1700 HOUR ELEVATION WAS 752.7 FEET, AT 1800 HOURS THE ELEVATION WAS 755.1, ABOUT 7 FEET BELOW THE SPILLWAY CREST. THE OUTFLOW FROM THE DAM WAS INCREASED TO 15,000 CUBIC FT PER SECOND AT 2100 HOURS 23 JUNE TO AVOID USING THE SPILLWAY. OUTFLOWS WERE GRADUALLY REDUCED TO 2250 CFS AT 1300 HOURS 24 JUNE TO REDUCE INFLOW TO THE ALREADY WET POTENTIAL FLOOD AREAS DOWNSTREAM. THE OUTFLOW IS BEING GRADUALLY INCREASED FROM THE 2250 CFS DISCHARGE REACH TO 8000 CFS BY MIDNIGHT 24 JUNE. THIS IS NECESSARY TO AVOID USING THE SPILLWAY SINCE THE RECEDING LIMB OF THE INFLOW HYDROGRAPH HAS BECOME ELONGATED AT A FAIRLY HIGH STEADY VALUE. PRESENT READINGS AT DRIVING PARK, ROCHESTER, ARE 24,300 CFS, AT AVON, N.Y. 20,200 CFS. THE PEAK AT ROCHESTER WAS 26,100 CFS AT 1600 HOURS. DISTRICT PERSONNEL HAVE

DISTR:

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RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

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SECURITY CLASSIFICATION

EXHIBIT 4 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 3										

BOOK — MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

VISITED PROJECT AREAS ON TONAWANDA CREEK AT BATAVIA, N.Y., ON OATKA CREEK AT WARSAW, N. Y., AT OWASCO LAKE OUTLET AT AUBURN, N.Y. SERIOUS PROPERTY DAMAGE HAS OCCURRED ON THE SHORES OF OWASCO LAKE AND ALONG THE OUTLET. NO SERIOUS DAMAGE APPARENT TO ANY OF THE Federal PROJECTS.

5. IN ORDER TO PREVENT THE GENESEE RIVER FROM OVERFLOWING ITS RIGHT BANK INTO THE URBAN AREA OF HENRIETTA AND BRIGHTON, MONROE COUNTY, THIS OFFICE HAS ASSISTED AND OFFERED TECHNICAL ASSISTANCE IN THE CONSTRUCTION OF SANDBAG LEVEE ON RIVER RD. IT IS ESTIMATED THAT THE MT. MORRIS DAM PREVENTED ABOUT $100,000,000 OF DAMAGE TO DOWNSTREAM AREAS.

6. A CONSTRUCTION EXPERT FROM ROCK ISLAND DISTRICT IS IN WELLSVILLE TO DETERMINE THE AMOUNT AND TYPE OF DAMAGE SUFFERED TO THE EXISTING FLOOD CONTROL PROJECT. A ESTIMATE IS BEING MADE TO DETERMINE WHAT IS REQUIRED TO RESTORE THE PROJECT TO PRE-FLOOD CONDITIONS.

7. THE CUYAHOGA RIVER AND CHAGRIN RIVER RECEEDED TO BELOW FLOOD STAGES TODAY.

8. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE
S. MAIORE, Ch.Hydraulics Br., NCBED-H

SPECIAL INSTRUCTIONS

RELEASER
TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
BARRY G. ROUGHT, Ch.Engineering Div.

SIGNATURE
LTC, RICHARD J. BARRETT
Acting District Engineer

SECURITY CLASSIFICATION

EXHIBIT 4 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE - TIME	MONTH	YR
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BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 5 - ATTN: DAEN-CWO-E.

2. MINOR FLOODING STILL EXISTS IN THE LOWER GENESEE RIVER BELOW MT. MORRIS DAM. OUTFLOW FROM THE DAM IS HOLDING AT 8000 CFS AND THE LEVEL OF THE POOL IS EXPECTED TO CREST TONIGHT AT 756.0 UTILIZING 96% OF STORAGE. THIS WILL BE 4 FEET BELOW THE ELEVATION OF THE SPILLWAY.

3. PRESENT READINGS AT DRIVING PARK, ROCHESTER, ARE 15.6, 26,000 CFS AND AT AVON, N.Y. 540.6, 20,700 CFS. SANDBAG DIKES ARE PROTECTING SOME URBANIZED AREA IN BRIGHTON AND HENRIETTA. THE DISTRICT ENGINEER AGAIN MADE AN INSPECTION TOUR IN THE ROCHESTER AREA.

4. PROBLEMS HAVE OCCURRED AT CONESUS LAKE AND AT AUBURN ON OWASCO LAKE. BECAUSE OF HIGH STAGES ON CONESUS LAKE, LOCAL AUTHORITIES HAVE REMOVED PLUGS FROM A [illegible]

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

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SECURITY CLASSIFICATION

EXHIBIT 5

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PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
2 OF 2										

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

CONTROL STRUCTURE. THIS WILL CAUSE AN INCREASE OF INFLOWS ON CONESUS OUTLET AND INTO THE GENESEE RIVER. INCREASES WILL BE SMALL AND EFFECTS ON GENESEE RIVER STAGES ARE EXPECTED TO BE NEGLIGIBLE. IN AUBURN, LOCAL AUTHORITIES FEAR THAT THE DAM CONTROLLING OWASCO LAKE WILL FAIL. A DISTRICT CIVIL ENGINEER HAS BEEN DISPATCHED TO GIVE WHATEVER ADVICE IS POSSIBLE. CIVIL DEFENSE ASSISTANCE WAS OBTAINED TO PROVIDE AIR TRANSPORTATION. THE DAM IS APPROXIMATELY 10 FEET HIGH.

5. THE PEARL STREET BRIDGE WHICH HAD COLLAPSED INTO THE GENESEE RIVER AT WELLSVILLE HAS BEEN REMOVED BY LOCAL AUTHORITIES. IT NO LONGER IS AN OBSTRUCTION TO FLOW.

6. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
S. A. MAIORE, Ch.Hydraulics Branch

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
LTC. RICHARD I. BARRETT

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 5 (Cont'd)

DD FORM 173 JUL 63 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173, 1 NOV 5_ WHICH ARE OBSOLETE.

JOINT MESSAGEFORM

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PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS		FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
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BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 5 - ATTN: DAEN-CWO-E.

2. FLOOD THREATS IN THE UPPER AND LOWER GENESEE RIVER HAVE PASSED. MINOR FLOODING EXISTS IN THE LOWER GENESEE RIVER BELOW MT. MORRIS DAM. ALL STREAMS IN WESTERN NEW YORK ARE BELOW BANKFULL STAGE AND CONTINUE TO RECEDE. THE MOST SERIOUS AREAS REMAINING ARE CONESUS, OWASCO, ONEIDA, CAYUGA, SENECA, SKANEATELES LAKES WHERE LAKE LEVELS ARE HIGH AND OUTLET STREAMS ARE AT OR ABOVE BANKFULL STAGE.

3. THE PEAK WATER LEVEL OF 755.80 BEHIND MT. MORRIS DAM OCCURRED AT 1900 HOURS, 25 JUNE. THE 1500 HOUR ELEVATION WAS 754.95 FEET, AT 1700 HOURS THE ELEVATION WAS 754.8, ABOUT 5 FEET BELOW THE SPILLWAY CREST. THE OUTFLOW FROM THE DAM HAS BEEN MAINTAINED AT LESS THAN 8000 CUBIC FEET PER SECOND THROUGHOUT THE DAY. INFLOWS HAVE GRADUALLY DECREASED TO 4800 CFS AT 1700 HOURS, 26 JUNE. ALTHOUGH

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 6

JOINT MESSAGEFORM

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
2 OF 3									

BOOK — MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

THE FLOW AT ROCHESTER HAS BEEN STEADY AT 25,000 CFS THROUGHOUT THE DAY, TWO OTHER CONTROL POINTS BETWEEN MT. MORRIS AND ROCHESTER, JONES BRIDGE AND AVON HAVE DROPPED ABOUT ONE FOOT AND ONE HALF FOOT RESPECTIVELY.

4. PRELIMINARY ESTIMATES OF FLOOD DAMAGES WHICH WOULD HAVE BEEN PREVENTED BY PROJECTS UNDER STUDY ARE:

CANASERAGA CREEK -	$2,000,000
STANNARD RESERVOIR	$15,000,000
SIERKS-LINDEN RESERVOIR	$9,000,000

5. PRELIMINARY ESTIMATES OF FLOOD DAMAGES PREVENTED BY EXISTING PROJECTS ARE:

GENESEE RIVER BELOW MT. MORRIS LAKE -	$140,000,000
GENESEE RIVER AT WELLSVILLE	$3,000,000
CAYUGA INLET AT ITHACA	$3,000,000
OWASCO OUTLET AT AUBURN	$1,000,000
OATKA CREEK AT WARSAW	$1,000,000
TONAWANDA CREEK AT BATAVIA	$500,000

6. PRELIMINARY ESTIMATES OF DAMAGES THAT WOULD HAVE BEEN PREVENTED BY AUTHORIZED PROJECTS:

6 5 4 3 2 1 0

DISTR:

0

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 6 (Cont'd)

JOINT MESSAGEFORM

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE - TIME	MONTH	YR
3 OF 3										

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

A. CHAGRIN RIVER AT EASTLAKE, OHIO IS ESTIMATED AT $100,000.

B. BIG CREEK AT CLEVELAND, OHIO IS ESTIMATED AT $250,000.

7. PRELIMINARY ESTIMATES OF DAMAGES ALONG THE NORTH CENTRAL OHIO LAKEFRONT EXCEED $2 MILLION, CONSISTING PRIMARILY OF SUNKEN PLEASURE CRAFT.

8. FIVE MILITARY PERSONNEL HAVE BEEN DETAILED TO THE BUFFALO DISTRICT TO PERFORM REHABILITATION WORK.

9. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
S. A. MAIORE, Chief. Hyd.Br.

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
LTC. RICHARD J. BARRETT

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 6 (Cont'd)

JOINT MESSAGEFORM							SECURITY CLASSIFICATION: UNCLASSIFIED		
PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
1 OF 2	271845Z	PP			UU		27	June	72

BOOK — MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 6 - ATTN: DAEN-CWO-E.

2. PEAK STAGES HAVE OCCURRED ON SEVERAL LAKES IN CENTRAL, NY. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	TREND
SENECA AT WATKINS GLEN	448.5	450.5	-	FALLING
SENECA AT GENEVA	449.2	-	450.2	STEADY
CAYUGA AT ITHACA	386.4	387.8	387.6	FALLING
CAYUGA AT MUD LOCK	386.6	-	387.4	FALLING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SMALLWE, Ch, [illegible] Br, NCBED-H EXT 5A

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

BOROUGHT, Ch, Eng. Div. EXT 50

SIGNATURE

ROBERT L. MOORE, COL, CE

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 7

DD FORM 173 — SUPERSEDES DD FORM 173, 1 NOV 65 AND DD FORM 173-1, 1 NOV 65, WHICH ARE OBSOLETE.

OWASCO	712.5	712.9	711.1	FALLING
SKANEATELES	864.6	865.2	865.2	FALLING
ONONDAGA	371.6	-	370.6	RISING
ONEIDA	374.9	-	374.2	STEADY
Canandaigua ~~CANADAIGUA~~	690.2	691.7	691.4	FALLING

3. THE SENECA RIVER (BARGE CANAL) IN CENTRAL NEW YORK IS CAUSING SEVERE FLOODING TO AGRICULTURAL (MUCK) LANDS. THE RIVER AT BALDWINSVILLE IS 378.2, UP 0.1 FOOT SINCE YESTERDAY, RECORD STAGE IS 378.5. RIVER SHOULD REMAIN IN FLOOD 10 TO 14 DAYS. ALTHOUGH THE OSWEGO RIVER BASIN IS RISING SLOWLY AT PHOENIX, FULTON AND OSWEGO, NO PROBLEMS ARE ANTICIPATED.

4. THE POOL ELEVATION AT MT. MORRIS DAM WAS 753.4 ft @0800 HOURS THIS DATE. INFLOWS TO MOUNT MORRIS HAVE DECREASED TO 4,000 CFS, OUTFLOWS HAVE BEEN MAINTAINED AT 8,000 CFS. CONTROL POINTS BETWEEN MT. MORRIS AND ROCHESTER ARE RECEDING.

5. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
1 OF 3	281830Z	PP			UU			28	June	72

BOOK — MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 7 - ATTN: DAEN-CWO-E.

2. SUMMARY OF CONDITIONS ON SEVERAL LAKES IN CENTRAL NEW YORK. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	27 Jun	TREND
CANANDAIGUA	690.2	691.7	691.3	691.4	FALLING
SENECA AT GENEVA	449.2	450.7	450.1	450.2	FALLING
CAYUGA AT ITHACA	386.4	387.8	387.5	387.6	FALLING
CAYUGA AT MUD LOCK	386.0	-	387.4	387.4	STEADY
OWASCO	712.5	712.0	710.4	711.1	FALLING
SKANEATELES	864.6	865.2	865.1	865.2	FALLING
ONONDAGA	371.5	-	370.8	370.6	RISING
ONEIDA	374.9	[illegible]	374.5	374.4	FALLING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
S. A. MALONE, CHIEF, HYD. BR.

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
B.G.ROUGHT, CHIEF, ENGRG. DIV.

SIGNATURE
RICHARD J. BARRETT
LTC, C of E

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 8

DD FORM 173, REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE.

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
2 OF 3	281830	PP			UU				

BOOK — MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

3. SEVERE FLOODING TO AGRICULTURAL LANDS CONTINUE ALONG THE SENECA RIVER (BARGE CANAL). MINOR FLOODING ON THE OSWEGO RIVER (BARGE CANAL). STAGE DATA ARE AS FOLLOWS:

LOCATION		NORMAL POOL	PEAK	TODAY	~~YDA~~ 27 Jun	TREND
SENECA RIVER						
AT MAYS POINT, LOCK #25	UPPER	381	387.8	386.8	387.5	FALLING
	LOWER	374	385.2	384.9	385.2	FALLING
AT BALDWINSVILLE, LOCK #24	UPPER	374	-	378.3	378.2	STEADY
	LOWER	363	-	371.2	371.[illegible]	RISING
OSWEGO RIVER						
AT PHOENIX, LOCK #1	UPPER	363	-	366.0	365.9	RISING
	LOWER	354	-	361.0	360.9	RISING
AT FULTON, LOCK #2	UPPER	354	-	356.5	356.[illegible]	RISING
	LOWER	-	-	340.6	340.6	STEADY
AT OSWEGO, LOCK #7		272	-	274.5	274.5	STEADY

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 8 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 3	281830Z	PP			UU					

BOOK	MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

4. THE POOL ELEVATION AT MT. MORRIS DAM WAS 749.55 AT 1330 HOURS THIS DATE. INFLOWS TO MT. MORRIS HAVE DECREASED TO 1,700 CFS, OUTFLOWS HAVE BEEN MAINTAINED AT 8,000 CFS. CONTROL POINTS BELOW THE DAM AT JONES BRIDGE AND AVON HAVE DROPPED 0.4 FOOT SINCE 0800 THIS DATE AND ARE BELOW FLOOD STAGE. THE STAGE AT ROCHESTER IS HOLDING STEADY AT 13.8 FEET, 0.8 FOOT ABOVE FLOOD STAGE.

5. A REPRESENTATIVE OF THE HYDRAULICS BRANCH IS GOING TO ASSIST TWO REPRESENTATIVES FROM NORTH CENTRAL DIVISION IN MAKING A BUCKET SURVEY IN THE GENESEE AND OSWEGO RIVER BASINS.

6. TWO REPRESENTATIVES OF THE FOUNDATIONS AND MATERIALS BRANCH AND ONE REPRESENTATIVE OF THE TECHNICAL BRANCH ARE ENROUTE TO WELLSVILLE TO HANDLE ON-SITE MODIFICATIONS FOR EMERGENCY REHABILITATION OF THE EXISTING LOCAL PROTECTION PROJECT.

7. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE
S.A.MAIORE, CHIEF, HYDRAULICS BR.

RELEASER
TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
R.G.ROUGHT, CHIEF, ENGRG. DIV.

SIGNATURE
RICHARD J. BARRETT
LTC, C of E

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 8 (Cont'd)

DD FORM 173 ... EDITIONS OF DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE.

JOINT MESSAGEFORM							SECURITY CLASSIFICATION: UNCLASSIFIED		
PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH / YR
1 OF 5	291900Z	PP			UU			29	[illegible] 7[illegible]

BOOK — MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 8 - ATTN: DAEN-CWO-E.

2. THE FOLLOWING INFORMATION WAS RECEIVED FROM THE ROCHESTER WEATHER SERVICE AT 1000 HRS., THIS DATE. A STORM CENTER IS NOW OVER WESTERN OHIO BORDER MOVING [illegible] TOWARD WESTERN NY. CLEVELAND HAS RECEIVED 1.5 INCHES, COLUMBUS [illegible].75 INCH AND MOST OF THE OTHER STATIONS ABOUT 0.25 INCH OF PRECIPITATION. NO FLOOD [illegible] ARE PREDICTED FOR ANY STREAM IN THE GENESEE RIVER VALLEY WITH THE POSSIBLE EXCEPTION OF CANASERAGA CREEK. SHOWERS ARE NOW MOVING INTO THE GENESEE VALLEY AND SHOULD LAST 36 HOURS, WITH 1 INCH OF RAIN FORECASTED. THE BUFFALO WEATHER SERVICE STATION HAS FLASH FLOOD WATCHES OUT FOR THE FOLLOWING COUNTIES WEST OF THE GENESEE BASIN: ERIE, NIAGARA, GENESEE, ORLEANS, CATTARAUGUS AND CHAUTAUQUA. A RAINFALL OF 1 INCH TO 2 INCHES IS NEEDED TO PRODUCE FLASH FLOODING IN THESE COUNTIES.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: S. A. MAJORE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: LARRY G. KNIGHT Chief, [illegible]

SIGNATURE

ROBERT L. MOORE COL CE DE

SECURITY CLASSIFICATION

EXHIBIT 9

DD FORM 173 [illegible] DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
2 OF 5	291900Z	PP			UU				

BOOK	MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

3. A PRELIMINARY DAMAGE ESTIMATE HAS BEEN COMPLETED. A TABULATION BY COUNTIES AS REPORTED TO THE DISTRICT OFFICE IS AS FOLLOWS:

COUNTY	DAMAGE
* ALLEGANY	$10,000,000
MONROE	4,500,000
* ONTARIO	10,000,000
* SENECA	600,000
* LIVINGSTON	60,000,000
ONEIDA	[illegible],000,000
MADISON	3,000,000
ONONDAGA	15,000,000
* SCHUYLER	[illegible],000,000
WAYNE	2,000,000
WYOMING	[illegible],000,000
* YATES	5,000,000
* TOMPKINS	2,000,000

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 9 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
3 OF 5	291900Z	PP			UU				

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

COUNTY	DAMAGE
CAYUGA	$13,000,000
* CATTARAUGUS	NONE AVAILABLE
LEWIS	300,000
CHAUTAQUA	2,000,000
TOTAL TO DATE	$11[illegible],400,000

* COUNTIES THAT AS OF THIS DATE HAVE BEEN DECLARED DISASTER AREAS.

4. SUMMARY OF CONDITIONS ON SEVERAL LAKES IN CENTRAL NY. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	28 JUNE	TREND
CANANDAIGUA	690.2	691.7	69[illegible]	619.3	FALLING
KEUKA	-	719.6	719.2	719.3	FALLING
SENECA AT GENEVA	449.2	450.2	450.0	450.1	FALLING
CAYUGA AT ITHACA	386.4	38[illegible].8	387.4	387.5	FALLING
CAYUGA AT MUD LOCK	386.6	-	387.2	387.4	FALLING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 9 (Cont'd)

DD FORM 173 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE.

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
4 OF 5	291900Z	PP			UU				

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LAKE	PREVIOUS RECORD	PEAK	TODAY	28 JUNE	TREND
OWASCO	712.5	712.0	710.6	710.4	FALLING
SKANEATELES	864.6	865.2	865.1	865.2	FALLING
OTISCO	-	791.6	790.1	790.3	FALLING
ONONDAGA	371.6	370.8	370.6	370.8	FALLING
ONEIDA	374.9	374.2	373.8	374.0	FALLING

5. SEVERE FLOODING TO AGRICULTURAL LANDS CONTINUE ALONG THE SENECA RIVER (BARGE CANAL). STAGES ARE AS FOLLOWS:

LOCATION		NORMAL POOL	PEAK	TODAY	28 JUNE	TREND
SENECA RIVER						
AT MAYS POINT, LOCK #25	UPPER	381	387.8	386.2	385.5	FALLING
	LOWER	374	385.2	384.7	384.9	FALLING
AT BALDWINSVILLE, LOCK #24	UPPER	374	378.3	378.2	378.3	FALLING
	LOWER	363	371.2	371.1	371.2	FALLING
OSWEGO						
AT PHOENIX, LOCK #1	UPPER	363	366.4	365.9	366.0	FALLING
	LOWER	354	-	361.1	[illegible]	RISING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 9 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
5 OF 5	291900Z	PP			UU					

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LOCATION		NORMAL POOL	PEAK	TODAY	28 JUNE	TREND
AT FULTON, LOCK #2	UPPER	354	-	356.5	356.5	STEADY
	LOWER	-	-	340.7	340.6	RISING
AT OSWEGO, LOCK #7		272	274.5	274.4	274.5	FAILING

6. IT HAS BEEN ESTIMATED BY THIS OFFICE THAT ABOUT 700 MILES OF STREAMS HAVE EXPERIENCED FLOODING CONDITIONS THIS DATE. OF THE TOTAL, 414 MILES IS ESTIMATED TO BE IN THE GENESEE RIVER BASIN

7. COLONEL MOORE, DISTRICT ENGINEER, ACCOMPANIED BY MR. ROUGHT, CHIEF, ENGINEERING DIVISION, ARE IN WELLSVILLE TO MAKE DECISION REGARDING SCOPE OF WORK FOR AWARD OF CONTRACT TO REHABILITATE THE WELLSVILLE LOCAL PROTECTION PROJECT. LTC BARRETT, DEPUTY DISTRICT ENGINEER, HAS BEEN ASSIGNED AS THE PROJECT ENGINEER FOR THE REHABILITATION PROJECT.

8. THE POOL ELEVATION AT MT. MORRIS DAM WAS 746.0 AT 1300 HOURS THIS DATE. INFLOWS TO MT. MORRIS HAVE INCREASED 300 CFS FROM YESTERDAY, TO 2,000 CFS; OUTFLOWS HAVE BEEN MAINTAINED AT 8,000 CFS. CONTROL POINTS BELOW THE DAM AT JONES BRIDGE, AVON AND ROCHESTER ARE BELOW FLOOD STAGE.

9. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER — TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 9 (Cont'd)

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
1 OF 3	301915Z	PP			UU		30	Jun	72

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 9 -- ATTN: DAEN-CWO-E.

2. THE FOLLOWING INFORMATION WAS RECEIVED FROM THE ROCHESTER WEATHER SERVICE AT 0900 HRS., THIS DATE. APPROXIMATELY 1.2 INCHES OF RAIN FELL OVERNIGHT ON THE GENESEE RIVER BASIN (BELOW MT. MORRIS DAM) AND AN AVERAGE OF 0.5 INCH OF RAIN ON THE GENESEE RIVER VALLEY (ABOVE MT. MORRIS DAM). THE RUNOFF ON THE LOWER BASIN IS EXPECTED TO RAISE THE RIVER STAGE AT ROCHESTER TO SLIGHTLY ABOVE FLOOD STAGE. THE WEATHER SERVICE FORECAST OF A FLOOD STAGE AT ROCHESTER WAS BASED ON AN OUTFLOW, FROM MT. MORRIS, OF 8000 CFS. HOWEVER, OUTFLOWS WERE REDUCED TO APPROXIMATELY 6,000 CFS AT 1600 HRS, 29 JUNE 1972. IN LIGHT OF LAST EVENING'S RAINFALL AND THE WEATHER FORECAST OF SHOWERS TILL NEXT TUESDAY (4 JULY), THE OUTFLOW FROM MT. MORRIS WAS FURTHER REDUCED TO 3900 CFS at 0900 HRS, THIS DATE, TO PREVENT THE GENESEE RIVER FROM REACHING FLOOD STAGE AT ROCHESTER. THE REMAINING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
S. A. MAIORE, Chief, Flood [illegible]

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
BARRY G. KNIGHT, Chief, Engr. Div.

SIGNATURE
ROBERT L. MOORE, COL, CE, DE

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 10

DD FORM 173 REPLACES DD FORM 173, [illegible] NOV 63, WHICH ARE OBSOLETE.

JOINT MESSAGEFORM

SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
2 OF 3	301915Z	PP			UU					

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

SUBJ: FLOODING IN WESTERN NEW YORK

TO:

CAPACITY OF THE RESERVOIR IS APPROXIMATELY 1 INCH OF RAINFALL RUNOFF.

3. RAINFALL OF APPROXIMATELY 1.3 INCHES FELL IN THE LAST 24 HOURS OVER THE SEVERAL LAKES IN CENTRAL NEW YORK, SENECA RIVER AND THE OSWEGO RIVER. THIS HAS REVERSED THE DOWNWARD TREND.

4. SUMMARY OF CONDITIONS ON SEVERAL LAKES IN CENTRAL NY. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	29 JUNE	TREND
CANANDAIGUA	690.2	691.7	691.1	691.1	RISING
KEUKA	–	719.6	719.1	719.0	RISING
SENECA AT GENEVA	449.2	450.2	450.0	450.0	RISING
CAYUGA AT ITHACA	386.4	387.8	387.5	387.4	RISING
CAYUGA AT MUD LOCK	386.6	·	387.3	387.2	RISING
OWASCO	712.5	712.0	710.0	710.0	RISING
SKANEATELES	864.6	865.2	865.0	865.1	RISING
OTISCO	–	791.6	790.0	790.1	FALLING
ONONDAGA	371.6	370.8	370.4	370.6	RISING
ONEIDA	374.9	374.2	373.6	373.8	FALLING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 10 (Cont'd)

DD FORM 173

JOINT MESSAGEFORM

SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 3										

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

SUBJ: FLOODING IN WESTERN NEW YORK

TO:

5. SEVERE FLOODING TO AGRICULTURAL LANDS CONTINUE ALONG THE SENECA RIVER (BARGE CANAL). STAGES ARE AS FOLLOWS:

LOCATION	NORMAL	POOL	PEAK	TODAY	29 JUNE	TREND
SENECA RIVER						
AT MAYS POINT, LOCK #25	UPPER	381	387.8	385.9	386.2	FALLING
	LOWER	374	385.2	384.5	384.7	FALLING
AT BALDWINSVILLE, LOCK #24	UPPER	374	378.3	378.2	378.2	RISING
	LOWER	363	371.2	371.2	371.1	RISING
OSWEGO RIVER						
AT PHOENIX, LOCK #1	UPPER	363	366.0	365.0	365.9	RISING
	LOWER	354	-	361.0	361.1	FALLING

6. THE POOL ELEVATION OF MT. MORRIS DAM WAS 743.45 AT 1300 HOURS, THIS DATE. INFLOWS TO MT. MORRIS HAVE INCREASED 1,800 CFS FROM YESTERDAY TO 3,800 CFS; OUTFLOWS HAVE BEEN REDUCED FROM 8,000 CFS TO 6,000 CFS AT 1600 HOURS ON 29 JUNE 1972 AND FURTHER REDUCED TO 3,900 CFS AT 0900 HOURS, THIS DATE. CONTROL POINTS BELOW THE DAM AT JONES BRIDGE, AVON AND ROCHESTER ARE BELOW FLOOD STAGE.

7. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR.

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 10 (Cont'd)

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
1 OF 3		PP			UU			1	Jul	72

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 10 - ATTN: DAEN-CWO-E.

2. THE INFLOW TO MT. MORRIS CRESTED 30 JUNE 1972 AT 2200 HOURS AT A FLOW OF 5,600 CFS. THE OUTFLOW THROUGH THE DAM WAS REDUCED TO 3,800 CFS AT 0400 HOURS 30 JUNE 1972, BECAUSE RAINFALL IN THE LOWER GENESEE RIVER BASIN WAS EXPECTED TO RAISE THE RIVER AT ROCHESTER TO ABOVE FLOOD STAGE.

3. AT ALL CONTROL POINTS ALONG THE GENESEE RIVER THE STAGES ARE WELL BELOW FLOOD STAGE. WE ARE NOW IN A STABLIZING POSITION IN WHICH WE WILL MAINTAIN A STEADY FLOW IN THE LOWER GENESEE TO:

A. EVACUATE RESERVOIR STORAGE

B. MAINTAIN NONDAMAGING STAGES ALONG THE ENTIRE LENGTH OF THE LOWER GENESEE RIVER.

4. NO SIGNIFICANT DR[illegible] IN THE HEADWATER POOL HAS OCCURRED TODAY BECAUSE OF THE PREVIOUS REDUCTION IN THE OUTFLOW.

5. THIS IS THE FINAL REPORT ON THE GENESEE RIVER.

6. WE HAVE EXCELLENT INFORMATION ON THE LAKE ELEVATIONS IN THE OSWEGO RIVER

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: S. A. MA[illegible], Chief, ENGR, BR[illegible]

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: BARRY G. ROUGHT, Chief, Engrg. Div.

SIGNATURE: [illegible]

ROBERT L. MOORE, Col, CE, DE

SECURITY CLASSIFICATION

EXHIBIT 11

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
2 OF 3										

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

BASIN, HOWEVER, THE REPORT OF ACTUAL PHYSICAL FLOOD DAMAGES ~~IS EASY.~~ ~~[illegible]~~ is A MAN IN THE AREA TO INVESTIGATE DAMAGES AND REPORT TO OUR FLOOD CONTROL CENTER

7. SUMMARY OF CONDITIONS ON SEVERAL LAKES IN CENTRAL NEW YORK. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	30 JUNE	TREND
CANANDAIGUA	690.2	691.7	691.1	691.1	STEADY
KEUKA	-	719.6	719.2	719.1	RISING
SENECA AT GENEVA	449.2	450.2	450.0	650.0	STEADY
CAYUGA AT ITHACA		UNAVAILABLE			
CAYUGA AT MUD LOCK	285.6	-	287.3	[illegible]	[illegible]
OWASCO	712.5	712.0	709.7	710.0	RISING
SKANEATELES	864.6	865.2	865.1	865.1	STEADY
OTISCO	-	791.6	789.9	790.0	FALLING
ONONDAGA		UNAVAILABLE			
ONEIDA	374.9	374.2	373.6	373.6	STEADY

8. SEVERE FLOODING TO AGRICULTURAL LANDS CONTINUE ALONG THE SENECA RIVER (ERIE CANAL). STAGES ARE AS FOLLOWS:

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE | SPECIAL INSTRUCTIONS

RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 11 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 3										

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

LOCATION	NORMAL POOL	PEAK	TODAY	30 JUNE	TREND
SENECA RIVER					
AT MAYS POINT, LOCK #25	UPPER 381	387.8	386.5	385.9	RISING
	LOWER 374	385.2	384.7	384.5	RISING
AT BALDWINSVILLE, LOCK #24	UPPER 374	378.3	378.2	378.2	STEADY
	LOWER 363	371.2	371.1	371.2	STEADY
OSWEGO RIVER					
AT PHOENIX, LOCK #[illegible]	UPPER 363	366.0	365.9	366.0	STEADY
	LOWER 354	-	361.1	[illegible]	STEADY

9. NO APPRECIABLE PRECIPITATION IS FORECAST FOR EITHER THE GENESEE RIVER [illegible] OSWEGO RIVER BASIN.

10. ADDITIONAL REPORT ON OSWEGO RIVER BASIN WILL BE MADE AS CONDITIONS [illegible]

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 11 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
1 of 3		PP								

BOOK	MESSAGE HANDLING INSTRUCTIONS

FROM: DISTRICTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT No. 11 - ATTN: DAEN-CWO-E.

2. SEVERE FLOODING TO AGRICULTURAL LANDS ALONG THE SENECA RIVER, OSWEGO BASIN CONTINUES. THE REPORT OF ACTUAL PHYSICAL FLOOD DAMAGES IS NOT COMPLETE IN ALL AREAS.

3. LOCALIZED THUNDERSTORM ACTIVITY AMOUNTING TO 1/4 TO 1/2 INCHES PRECIPITATION IS FORECAST FOR THE OSWEGO BASIN BY THE BUFFALO WEATHER SERVICE.

4. FLOOD LEVELS IN THE OSWEGO BASIN SYSTEM ARE GENERALLY IMPROVING AT A SLOW RATE.

5. THE REGULATING AGENCY, N.Y.S. DEPARTMENT OF TRANSPORTATION, REPORTS FLOOD LEVELS WILL REMAIN RELATIVELY HIGH FOR SEVERAL DAYS.

6. SUMMARY OF CONDITIONS ON SEVERAL LAKES AND RIVERS IN THE OSWEGO RIVER SYSTEM

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: S. A. MALONE, CH.Hyd. Br.

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: ROY A. ROBERTS, LTC-Director Flood Control

SIGNATURE: Roy A. Roberts

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 12

DD FORM 173 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63 WHICH ARE OBSOLETE

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
2 OF 3									

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	1 JUL	TREND
CANANDAIGUA	690.2	691.7	691.0	691.1	FALLING
KEUKA	-	719.6	719.1	719.2	FALLING
SENECA AT GENEVA	[illegible]	450.2	450.0	450.0	STEADY
CAYUGA AT ITHACA		UNAVAILABLE (UNAVAL)			
CAYUGA AT MUD LOCK	386.6	-	387.3	387.3	STEADY
OWASCO	712.5	712.0	UNAVAL	709.7	
SKANEATELES	864.6	865.2	UNAVAL	865.1	
OTISCO	-	791.6	789.8	789.9	FALLING
ONONDAGA		UNAVAILABLE		370.6	
ONEIDA	374.9	374.2	373.5	373.6	FALLING

DISTR.

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 12 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 3										

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

LOCATION		NORMAL POOL	PEAK	TODAY	1 JULY	TREND
SENECA RIVER						
AT MAYS POINT, LOCK #25	UPPER	381	387.8	386.6	386.5	RISING
	LOWER	374	385.2	384.6	384.7	FALLING
AT BALDWINSVILLE, LOCK #24	UPPER	374	378.3	378.1	378.2	FALLING
	LOWER	363	371.2	371.0	371.1	FALLING
OSWEGO RIVER						
AT PHOENIX, LOCK #1	UPPER	363	366.0	365.8	365.9	FALLING
	LOWER	354	-	361.0	361.1	FALLING

7. ADDITIONAL REPORTS ON OSWEGO BASIN WILL BE MADE AS CONDITIONS WARRANT.

DISTR.

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 12 (Cont'd)

DD FORM 173 1 JUL 69

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
4 OF 4	032000Z	PP			UU					72

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 12 - ATTN: DAEN-CWO-E.

2. WEATHER FORECAST FROM THE ROCHESTER WEATHER SERVICE IS AS FOLLOWS:

FLOOD WARNINGS IN EFFECT FOR PORTIONS OF THE LOWER AND UPPER GENESEE VALLEY. FROM READINGS RECEIVED UP TO THIS TIME IT APPEARS THAT MODERATE TO HEAVY RAINS HAVE BEEN OCCURRING OVER PARTS OF THE GENESEE VALLEY SINCE ABOUT MIDNIGHT. NEAR 1" OF RAIN HAS FALLEN IN THE CANASERAGA CREEK BASIN. ABOUT .85" WAS NEEDED TO REACH FLOOD STAGE. CANASERAGA CREEK IS FORECAST TO REACH A CREST A LITTLE ABOVE FLOOD STAGE BY EVENING WITH MINOR FLOODING. RAIN IN THE AREA SHOULD MOSTLY END BY EVENING.

ON OATKA CREEK ABOUT 1/2" TO 1" HAS FALLEN. OATKA CREEK WILL CONTINUE TO RISE TODAY AND TONIGHT WITH A CREST NEAR FLOOD STAGE BY MORNING. RAIN IN THIS AREA SHOULD MOSTLY END BY EVENING.

DISTR:

DRAFTER TYPED NAMED TITLE, OFFICE SYMBOL AND PHONE

S. A. Miore, Hydr Br., 54 [illegible]

SPECIAL INSTRUCTIONS

RELEASER

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

B. G. ROUGHT, Ch, Engrg, 50 [illegible]

SIGNATURE

ROBERT L. MOORE
COL, CE, DISTRICT ENGINEER

SECURITY CLASSIFICATION

EXHIBIT 13

DD FORM 1 JUL 68 173 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE

JOINT MESSAGEFORM | SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
2 OF 4	032000Z	PP			UU					

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

WATERS FEEDING INTO GENESEE RIVER FROM RUNOFFS AND STREAMS BETWEEN THE MOUNT MORRIS DAM AND ROCHESTER SHOULD CAUSE THE RIVER TO RISE GENERALLY, BUT POSSIBLY REMAIN MOSTLY BELOW FLOOD STAGES.

IN THE UPPER GENESEE RAINFALL OF NEAR 1" HAS BEEN REPORTED FROM SCIO AND BOLIVAR, AS OF ABOUT 1:00 P.M., EDT, WITH MUCH OF IT IN THE 6 HOURS BEFORE 1:00 P.M. SINCE THE RATE OF .75 INCH IN 6 HOURS IS NEEDED FOR REACHING FLOOD STAGE, THE GENESEE RIVER FROM THE VICINITY OF WELLSVILLE TO PORTAGEVILLE IS FORECAST TO CONTINUE RISING POSSIBLY CRESTING NEAR FLOOD STAGE AROUND WELLSVILLE BY THIS EVENING, AND A FEW FEET BELOW FLOOD STAGE AT PORTAGEVILLE TOWARDS MIDNIGHT WITH MINOR LOWLAND FLOODING. SMALL STREAMS FEEDING THE GENESEE ARE FLOODING AND OTHERS MAY DO SO BY THIS EVENING.

IN SUMMARY, FLOOD STAGES MAY BE REACHED IN THE UPPER GENESEE VALLEY NEAR WELLSVILLE, CANASERAGA CREEK EARLY TONIGHT AND ON OATKA CREEK TUESDAY MORNING. MOST OF THE RAIN PRESENTLY OCCURRING SHOULD END BY THIS EVENING.

3. AS OF 1 JULY 1972, THE FOLLOWING COUNTIES HAVE BEEN DECLARED A DISASTER AREA: MONROE, STEUBEN, WAYNE, CAYUGA AND ONEIDA. THIS MAKES A TOTAL OF 14 COUNTIES IN NEW YORK WITHIN THE BUFFALO DISTRICT WHICH HAVE BEEN DECLARED A DISASTER AREA.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 13 (Cont'd)

JOINT MESSAGEFORM | SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
3 OF 4	032000Z	PP			UU				

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

4. FLOOD LEVELS IN THE OSWEGO BASIN SYSTEM ARE GENERALLY IMPROVING AT A SLOW RATE.

5. THE REGULATING AGENCY, N.Y.S. DEPARTMENT OF TRANSPORTATION, REPORTS FLOOD LEVELS WILL REMAIN RELATIVELY HIGH FOR SEVERAL WEEKS.

6. SUMMARY OF CONDITIONS ON SEVERAL LAKES AND RIVERS IN THE OSWEGO RIVER SYSTEM ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	2 JUL	TREND
CANANDAIGUA	690.2	691.7	690.9	691.0	FALLING
KEUKA	-	719.6	719.0	719.1	FALLING
SENECA AT GENEVA	449.2	450.2	449.1	450.0	FALLING
CAYUGA AT ITHACA	386.4	387.8	387.3	-	FALLING
CAYUGA AT MUD LOCK	386.6	387.5	387.0	387.3	FALLING
OWASCO	712.5	712.0	709.4	709.4	STEADY
SKANEATELES	864.6	865.2	865.0	865.1	FALLING
OTISCO	790.8	791.6	789.7	789.8	FALLING
ONONDAGA	371.6	370.8	369.8	-	FALLING
ONEIDA	374.9	374.2	373.3	373.5	FALLING

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER — TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 13 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
4 OF 4	032000Z	PP			UU					

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LOCATION		NORMAL POOL	PEAK	TODAY	2 JUL	TREND
SENECA RIVER						
AT MAYS POINT, LOCK #25	UPPER	381	387.8	386.3	386.6	FALLING
	LOWER	374	385.2	384.5	384.7	FALLING
AT BALDINSWINSVILLE, LOCK #24	UPPER	374	378.5	378.1	378.1	STEADY
	LOWER	363	371.2	370.8	3[illegible]0	[illegible]G
OSWEGO						
AT PHOENIX, LOCK #1	UPPER	363	366.0	365.7	365.8	FALLING
	LOWER	354	361.1	360.6	361.0	FALLING
AT FULTON, LOCK#2	UPPER	354	356.5	396.2	356.4	FALLING
	LOWER	-	340.7	340.5	340.5	STEADY
AT OSWEGO, LOCK #7	UPPER	272	274.5	274.2	274.2	FALLING

7. ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 13 (Cont'd)

JOINT MESSAGEFORM							SECURITY CLASSIFICATION UNCLASSIFIED		
PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE - TIME	MONTH YR
1 OF 3	041745Z	PP			UU			4	July
BOOK	MESSAGE HANDLING INSTRUCTIONS								

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 13 - ATTN: DAEN-CWO-E.

2. FLOOD WARNINGS IN THE GENESEE RIVER BASIN HAVE BEEN CANCELLED. CONDITIONS REMAINED STEADY, EVEN WITH THE SLIGHT RAINFALL OVERNIGHT. NO PROBLEMS REPORTED. GENESEE RIVER CONDITIONS CONTINUE TO IMPROVE.

3. FLOOD LEVELS IN THE OSWEGO BASIN SYSTEM ARE GENERALLY STILL IMPROVING AT A SLOW RATE.

4. THE REGULATING AGENCY, N. Y. S. DEPARTMENT OF TRANSPORTATION, REPORTS FLOOD LEVELS WILL REMAIN RELATIVELY HIGH FOR SEVERAL WEEKS.

5. SUMMARY OF CONDITIONS ON SEVERAL LAKES AND RIVERS IN THE OSWEGO RIVER SYSTEM ARE AS FOLLOWS:

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
S. A. MAIORE, CH. Hydraulics Branch

SPECIAL INSTRUCTIONS

RELEASER
TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
LTC ROY A ROBERTS, Dir. Flood Cont.Ce...

SIGNATURE
Roy A Roberts

SECURITY CLASSIFICATION
EXHIBIT 14

DD FORM 173

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
2 OF 3		PP			UU					

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

LAKE	PREVIOUS RECORD	PEAK	TODAY	3 JUL	TREND
CANANDAIGUA	690.2	691.7	UNAVAL	690.9	FALLING
KEUKA	-	719.6	719.0	719.0	STEADY
SENECA AT GENEVA	449.2	450.2	UNAVAL	449.1	UNAVAL
CAYUGA AT ITHACA	386.4	387.8	UNAVAL	387.3	UNAVAL
CAYUGA AT MUD LOCK	386.6	387.5	387.1	387.0	RISING
OWASCO	712.5	712.0	UNAVAL	709.4	UNAVAL
SKANEATELES	864.6	865.2	UNAVAL	865.0	UNAVAL
OTISCO	790.3	791.6	UNAVAL	789.7	UNAVAL
ONONDAGA	371.6	370.3	369.8	369.8	STEADY
ONEIDA	374.9	374.2	373.2	373.2	FALLING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 14 (Cont'd)

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
3 OF 3										

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

LOCATION		NORMAL POOL	PEAK	TODAY	3 JUL	TREND
SENECA RIVER						
AT MAYS POINT, LOCK #25	UPPER	381	387.8	386.0	386.3	FALLING
	LOWER	374	385.2	384.4	384.5	FALLING
AT BALDWINSVILLE, LOCK #24	UPPER	374	378.5	378.1	378.1	STEADY
	LOWER	363	371.2	370.8	370.5	STEADY
OSWEGO RIVER						
AT PHOENIX, LOCK #1	UPPER	363	366.0	365.7	365.7	STEADY
	LOWER	354	361.1	360.5	361.6	STEADY
AT FULTON, LOCK #2	UPPER	354	356.5	355.2	356.2	STEADY
	LOWER	-	340.7	340.4	340.5	FALLING
AT OSWEGO, LOCK #7	UPPER	272	274.5	274.2	274.2	STEADY

ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 14 (Cont'd)

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
1 OF 3	051850Z	PP			UU					

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 14 - ATTN: DAEN-CWO-C.

2. THE BUFFALO WEATHER SERVICE FORECASTS LIGHT SHOWERS FOR THE NEXT 48 HOURS FOR THE GENESEE RIVER AND OSWEGO RIVER BASINS.

3. SUMMARY OF CONDITIONS ON SEVERAL LAKES IN CENTRAL NY. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	4 JULY	TREND
CANANDAIGUA	690.2	691.7	690.7	690.8	FALLING
KEUKA	-	719.5	718.9	719.0	FALLING
SENECA AT GENEVA	449.2	450.2	449.9	450.0	FALLING
CAYUGA AT ITHACA	386.4	387.8	387.3	-	FALLING
CAYUGA AT MUD LOCK	386.6	387.5	387.0	387.1	FALLING
OWASCO	712.5	712.0	709.1	709.28	FALLING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: S. A. MAIORE Chief, Hydraulics Br.

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: BARRY G. POUCHT Chief, Engr. Division

SIGNATURE

ROBERT L. SMITH COL CE DE

SECURITY CLASSIFICATION

EXHIBIT 15

DD FORM 1 JUL 68 173 REPLACES DD FORM ... WHICH ARE OBSOLETE

JOINT MESSAGEFORM

SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
2 OF 3	051850Z	PP			UU					

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LAKE	PREVIOUS RECORD	PEAK	TODAY	4 JULY	TREND
SKANEATELES	864.6	865.2	865.0	865.0	STEADY
OTISCO	790.8	791.6	789.6	789.7	FALLING
ONONDAGA	371.6	370.8	369.7	369.8	FALLING
ONEIDA	374.9	374.2	373.1	373.2	FALLING

LOCATION		NORMAL POOL	PEAK	TODAY	4 JULY	TREND
SENECA RIVER						
AT HAYS POINT, LOCK#25	UPPER	381	387.8	385.9	[illegible]	[illegible]
	LOWER	374	385.2	384.2	384.4	FALLING
AT BALDWINSVILLE, LOCK#24	UPPER	374	378.5	378.0	378.1	FALLING
	LOWER	363	371.2	[illegible]	[illegible]	FALLING
OSWEGO RIVER						
AT PHOENIX, LOCK #1	UPPER	363	366.0	365.6	365.7	FALLING
	LOWER	354	361.1	[illegible]	360.6	FALLING
AT FULTON, LOCK #2	UPPER	354	356.5	356.2	356.2	FALLING
	LOWER	-	340.7	[illegible]	[illegible]	FALLING

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 15 (Cont'd)

DD FORM 1 JUL 58 173 REPLACES DD FORM [illegible] WHICH ARE OBSOLETE.

JOINT MESSAGEFORM

SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE - TIME	MONTH	YR
3 OF 3	051850Z	PP			UU					

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LOCATION		NORMAL POOL	PEAK	TODAY	4 JULY	TREND
AT OSWEGO, LOCK #7	UPPER	272	274.5	274.1	274.2	FALLING

4. IN VIEW OF THE SLOW DOWNWARD TREND OF THE ABOVE LAKES AND RIVERS FOR THE NEXT SEVERAL WEEKS, IT IS NOT CONSIDERED THAT DAILY TELETYPE REPORTS ARE REQUIRED. HOWEVER, IF CONDITIONS CHANGE, ADDITIONAL REPORTS WILL BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 15 (Cont'd)

DD FORM 173 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE – TIME	MONTH	YR
1 OF 3	101825Z	PP			UU			10	Jul	72

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 15 - ATTN: DAEN-CWO-E.

2. THE BUFFALO WEATHER SERVICE FORECASTS SCATTERED THUNDERSTORM ACTIVITY FOR THE NEXT 48 HOURS FOR THE GENESEE RIVER AND OSWEGO RIVER BASINS.

3. SUMMARY OF CONDITIONS ON SEVERAL LAKES IN CENTRAL N.Y. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	5 JULY	TREND
CANANDAIGUA	690.2	691.7	690.2	690.7	FALLING
KEUKA	-	719.6	718.2	718.9	FALLING
SENECA AT GENEVA	449.2	450.2	449.6	449.9	FALLING
CAYUGA AT ITHACA	386.4	387.8	386.7	387.3	FALLING
CAYUGA AT MUD LOCK	386.6	387.5	386.6	387.0	FALLING
OWASCO	712.5	712.0	708.6	709.1	FALLING

DISTR:

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

S.A. MAIORE Chief, Hydraulics Br.

SPECIAL INSTRUCTIONS

RELEASER

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

BARRY G. ROUGHT Chief, Engr. Div.

SIGNATURE

ROBERT L. MOORE COL CE DE

SECURITY CLASSIFICATION

EXHIBIT 16

DD FORM 173 1 JUL 68 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE.

GPO : 1969—O-348—16—

JOINT MESSAGEFORM

SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE - TIME	MONTH	YR
2 OF 3	101825Z	PP			UU				

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LAKE	PREVIOUS RECORD	PEAK	TODAY	5 JULY	TREND
SKANEATELES	864.6	865.2	864.8	865.0	FALLING
OTISCO	790.8	791.6	789.3	789.6	FALLING
ONONDAGA	371.6	370.8	368.1	369.7	FALLING
ONEIDA	374.9	374.2	372.2	373.1	FALLING

LOCATION		NORMAL POOL	PEAK	TODAY	5 JULY	TREND
SENECA RIVER						
AT MAYS POINT, LOCK#25	UPPER	381	387.6	383.8	[illegible]	FALLING
	LOWER	374	385.2	382.7	[illegible]	FALLING
AT BALDWINSVILLE,LOCK#24	UPPER	374	378.5	377.2	378.0	FALLING
	LOWER	363	371.2	369.2	370.7	FALLING
OSWEGO						
AT PHOENIX, LOCK#1	UPPER	363	366.0	365.0	365.6	FALLING
	LOWER	354	361.1	358.7	360.5	FALLING
AT FULTON, LOCK#2	UPPER	354	356.5	UNAV.	356.1	

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 16 (Cont'd)

JOINT MESSAGEFORM

SECURITY CLASSIFICATION

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
3 OF 3	101825Z	PP			UU				

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LOCATION		NORMAL POOL	PEAK	TODAY	5 JULY	TREND
AT FULTON, LOCK#2	LOWER	-	340.7	UNAV.	340.3	
AT OSWEGO, LOCK#7	UPPER	272	274.5	UNAV.	274.1	

4. ADDITONAL REPORTS WILL BE MADE ON A WEEKLY BASIS UNLESS CONDITIONS CHANGE AND REPORTS WILL THEN BE MADE AS CONDITIONS WARRANT.

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 16 (Cont'd)

JOINT MESSAGEFORM	SECURITY CLASSIFICATION UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE - TIME	MONTH	YR
1 OF 2	171930Z	PP			UU		17	July	72

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: DISTENGR BFLO NY //NCBED-H//

TO: DA (COE) //DAEN-CWO-E//

AND

DIVENGR NOCEN CHGO IL //NCDED//

AND

LIST ON ATTACHED SHEET

UNCLAS

SUBJ: FLOODING IN WESTERN NEW YORK

1. CATEGORY A FLOOD SITUATION REPORT NO. 16 - ATTN: DAEN-CWO-E.

2. SUMMARY OF CONDITIONS ON SEVERAL LAKES IN CENTRAL N.Y. DATA ARE AS FOLLOWS:

LAKE	PREVIOUS RECORD	PEAK	TODAY	10 JULY	TREND
CANANDAIGUA	690.2	691.7	689.9	690.2	FALLING
KEUKA	-	719.6	717.6	718.2	FALLING
SENECA AT GENEVA	449.2	450.2	449.0	449.6	FALLING
CAYUGA AT ITHACA	386.4	387.8	386.0	386.7	FALLING
CAYUGA AT MUD LOCK	386.6	387.5	385.7	386.6	FALLING
OWASCO	712.5	712.0	708.8	708.6	FALLING
SKANEATELES	864.6	865.2	864.5	864.8	FALLING
OTISCO	790.8	791.6	789.3	789.3	STEADY
ONONDAGA	371.6	370.8	367.2	368.1	FALLING
ONEIDA	374.9	374.2	371.4	372.2	FALLING

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE
S. A. MAIORE, CH., HYDRAULICS BRANCH SJM

RELEASER TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE
ROBERT L. MOORE, COL., CE, DIST. ENGR.

SIGNATURE

SPECIAL INSTRUCTIONS

SECURITY CLASSIFICATION

EXHIBIT 17

DD FORM 1 JUL 68 173 REPLACES DD FORM 173, 1 NOV 63 AND DD FORM 173-1, 1 NOV 63, WHICH ARE OBSOLETE.

GPO : 1969—448—10—80378-1 335-395

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY DATE – TIME	MONTH	YR
2 OF 2	171930Z	PP			UU				

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM:

TO:

SUBJ: FLOODING IN WESTERN NEW YORK

LOCATION		NORMAL POOL	PEAK	TODAY	10 JULY	TREND
SENECA RIVER						
AT MAYS POINT, LOCK #25	UPPER	381	387.8	382.6	383.8	FALLING
	LOWER	374	385.2	381.7	382.7	FALLING
AT BALDWINSVILLE, LOCK #24	UPPER	374	378.5	376.8	377.2	FALLING
	LOWER	363	371.2	368.1	369.2	FALLING
OSWEGO RIVER						
AT PHOENIX, LOCK #1	UPPER	363	366.0	364.4	365.0	FALLING
	LOWER	354	361.1	357.0	358.7	FALLING
AT FULTON, LOCK #2	UPPER	354	356.5	353.5	UNAVAL	
	LOWER	–	340.7	339.1	UNAVAL	
AT OSWEGO, LOCK #7	UPPER	272	274.5	273.1	UNAVAL	

3. LAKE CONDITIONS ARE NOW CONSIDERED NORMAL. NO FURTHER REPORTING WILL BE MADE.

DISTR:

DRAFTER TYPED NAMED, TITLE, OFFICE SYMBOL AND PHONE

SPECIAL INSTRUCTIONS

RELEASER — TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

EXHIBIT 17 (Cont'd)

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